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This study was performed to develop a methodology for establishing medical clerk requirements within the outpatient clinics at Blanchfield Army Community Hospital (BACH), Fort Campbell, Kentucky. In conclusion the author states that the work study method of analysis can be effectively utilized to establish medical clerk requirements in the ambulatory care area.

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A STUDY TO DEVELOP

A METHODOLOGY FOR ESTABLISHING MEDICAL CLERK REQUIREMENTS WITHIN THE OUTPATIENT CLINICS AT BLANCHFIELD ARMY COMMUNITY HOSPITAL FORT CAMPBELL, KENTUCKY

A Graduate Research Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Health Administration

by

Captain David A. Huddleston, MS

January 1987

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CHAPTER I

INTRODUCTION

Background

Hospitals everywhere suffer the ill effects of the spiraling inflation which has ravaged the health care industry during the last two decades. National health expenditures increased from $41.7 billion (6 percent of the gross national product [GNP]) in 1965 to $286.6 billion (9.8 percent of the GNP) in 1981. During this same period, health expenditures increased at an average annual rate of nearly 13 percent, exceeding the 9.5 percent growth rate for the GNP. Per capita health expenditures also increased significantly, from $211 in 1965 to $1,225 in 1981. Based on historical trends, the Health Care Financing Administration (HCFA) projects that national health expenditures will rise to over $820 billion by the year 1990.[1]

The reasons for this explosive rise in health care costs over the last twenty years are numerous and complex. Among the factors forcing costs to soar upward have been a rapidly changing technology, insufficient advances in systems design, and insufficient improvements in productivity. Moreover, rising expectations on the part of the consumer and increased public awareness have stimulated an ever-growing demand for more and better health care services. Governmental responses in the form of such programs as Medicare and Medicaid have served to reinforce that demand, further aggravating the pervasive effects of runaway inflation.[2]

Since 1965, there have been a number of attempts to slow the upward spiral of health care costs. Professional standards review organization (PSRO) legislation, certificate of need (CON) legislation, and congressional mandates for an ongoing review of existing services are prime examples of governmental attempts to limit reimbursement. The foregoing programs, however, have not targeted the single largest cost to hospitals-- labor. Although tremendous technological advancements have been made within the health care field in recent years, the industry remains labor intensive. In fact, a full 60 percent of hospital costs are labor related.[3]

In light of these problems of rapidly rising costs, shortages of personnel, and growing demand for increased services, it is incumbent upon health care administrators to insure that available personnel resources are utilized to the best advantage. The industrial engineering process of work study offers great assistance to hospital management in achieving this goal. As defined by Dow, work study is

> a generic term of those techniques, particularly method study and work measurement, which are used in the examination of human work in all its contexts and which lead systematically to the investigation of all the factors which affect the efficiency and economy of the situation being reviewed in order to effect improvement.[4]

Through work study, the work content of tasks are delineated, the standard time to perform these tasks is established, and the number

of employees needed to accomplish the work is specified. This process ultimately results in the establishment of a time standard upon which staffing can be based.

The current cost of inflation in the health care industry has created concerns for productivity that can no longer be ignored. Rather than basing staffing decisions on assumptions as has often been the case in the past, such decisions must now be based on facts. Work study provides the mechanisms for obtaining the facts, which in turn serve as the foundation upon which increased management effectiveness and greater productivity can be built.[5]

Conditions Prompting the Study

Blanchfield Army Community Hospital (BACH) is located on Fort Campbell, Kentucky. It is a 241-bed facility which provides inpatient and ambulatory care services to approximately 150,000 beneficiaries. The hospital has an average daily census of 131 and an average of five births occur daily.

The hospital operates 32 separate inhouse clinics which together treated 433,880 patients in fiscal year 1986. These clinics vary greatly in terms of size, staffing, and number of patients seen. To illustrate the wide variation in workload, The Neurology Clinic cared for 2,733 patients in fiscal year 1986 while the Emergency Room treated 43,209 patients during the same time frame. Because of these differences, it is difficult to identify a typical clinic.

At present, there is a total of 33 medical clerks working in 19 of the outpatient clinics at BACH. These clerks perform a myriad of administrative duties which facilitate the work of physicians and nursing personnel. Typical responsibilities of the medical clerk

include serving as a receptionist, performing record keeping duties, making appointments, performing clerical duties relating to patient care, and accomplishing a variety of miscellaneous tasks which are necessary to keep the clinic functioning smoothly. Additionally, these clerks serve as primary sources of information regarding the services offered by the hospital as well as the appropriate methods of gaining access to these services. Freed of the requirement to engage in the administrative activities referred to above, physicians, nurses, and other health care providers are able to devote a larger proportion of their time to hands-on patient care.

For the institution to gain maximum benefit from its medical clerks, these personnel must be allocated in sufficient numbers to satisfy the demand for their services within the various outpatient clinics. That this is not currently the case, however, is suggested by a number of factors. For instance, the command group at BACH has repeatedly observed physicians and nurses accomplishing administrative-type tasks more appropriately handled by support personnel. Another indicator that problems exist in this area is the increasing number of requests for additional administrative support which have been received from clinic chiefs over the last several months.

A factor which inhibits management's ability to adequately assess the aforementioned problems is the lack of a staffing standard for administrative support personnel in the outpatient arena. Current guidance regarding manpower requirements for Army hospitals is contained within Department of the Army Pamphlet 550-557, Staffing Guide for US Army Medical Department Activities. Published in 1974,

this document contains "yardsticks" which stipulate the number and type of personnel required to staff the clinical and administrative areas of the hospital. The guidance provided by these yardsticks tends to be very general in nature, however, and relies heavily on the use of local appraisal when the work varies by locale. Moreover, yardsticks have not yet been developed for every area of the hospital, necessitating that requirements be established in selected work centers based solely on local appraisal.

Because of the shortcomings inherent in current staffing procedures, the Deputy Commander for Administration at BACH directed that a study in the ambulatory care area be performed. What is needed is a standardized method of determining requirements for administrative support personnel in the outpatient clinics based on the amount of work performed. It is to this end that this research effort is directed.

Statement of the Research Effort

To develop a methodology for establishing medical clerk requirements within the outpatient clinics at Blanchfield Army Community Hospital (BACH), Fort Campbell, Kentucky.

Objectives

This study will focus on the Obstetrics/Gynecology (OB/GYN) Clinic, which will be used as a model to develop the methodology for establishing medical clerk requirements within the remaining outpatient clinics at BACH. The objectives of this study are as follows:

1. To conduct an extensive literature review on the subject of work study.

2. To become familiar with the operation of the OB/GYN Clinic at BACH.

3. To identify the major tasks performed by the medical clerks who work in the OB/GYN Clinic. Concurrent with this initiative is the identification of quantifiable outputs associated with the major tasks.

4. To determine the volume of work produced by the medical clerks.

5. To analyze collected workload data for purposes of identifying peak workload periods and comparing workload distribution among the individual clerks.

6. To determine the amount of time dedicated to accomplishing each of the major tasks which the medical clerks perform.

7. To develop workload based staffing standards for the two categories of medical clerks working in the OB/GYN Clinic.

8. To compare present medical clerk staffing to calculated staffing requirements and make appropriate recommendations.

Criteria

1. The basic methodology developed for establishing medical clerk requirements in the OB/GYN Clinic must be exportable to the remaining outpatient clinics within BACH.

2. The collection of clerical workload data must be performed by assigned clerical personnel.

3. The work measurement technique selected to quantify task accomplishment times must be adaptable for use by mid-level supervisory personnel.

4. The work measurement technique selected must be favorably

received by the workers under study.

5. A difference of 10 percent between present medical clerk staffing and calculated staffing requirements (expressed in terms of man-hours) will be considered significant.

Assumptions

1. Workload data collected during the course of this study will be accurately recorded.

2. The "Hawthorne" effect will not significantly influence the results of the time utilization studies.

3. No major procedural changes involving the work performed by the medical clerk personnel will be made during the course of this study.

Limitations

1. The scope of this project is limited to the OB/GYN Clinic at BACH.

2. Clerical workload data will be collected over a four week period of time.

Literature Review

A review of the literature yielded little information specifically geared to establishing clerical requirements in the ambulatory care area of a hospital. Contributing to this lack of pertinent information is the fact that work study analysts have traditionally focused their efforts on the production industry, rather than on the services industry of which hospitals are a part. Moreover, much of the research which has been conducted in the health care field has concerned itself with nursing services, the largest labor force in the hospital, rather than with the clerical staff.[6]

Although information applicable to the particular case at hand was scarce, the literature was replete with material detailing the history of work study and explaining the various tools used in work measurement. Accordingly, a review of these two subject areas is presented below.

History of Work Study

From earliest times man has sought better and simpler ways of producing the commodities upon which his livelihood depends. Although not recognized as such by primitive man, this early striving for methods improvement could be considered the true origin of work study. It was not until the nineteenth century, however, that explicit attention was paid to improving the manner in which jobs are accomplished. While many people have played an important role in their development and application, Frederick Taylor and Frank and William Gilbreth are regarded as the originators of those techniques which are embodied by the title "work study".[7]

Taylor, a mechanical engineer, developed and popularized the principles of scientific management at the turn of the nineteenth century. Early in his career Taylor began a systematic study of how workers performed their jobs. He was primarily interested in speeding up the completion of those tasks which, when taken together, comprise a particular job. The stopwatch concept, or time study, which was originated by Taylor remained the most popular technique for measuring work through the 1940s.[8]

The Gilbreths followed a few years later with their now famous study involving "therbligs," or symbols for motion. Unlike Taylor, who believed it was most important to determine the time required to

perform an operation, the Gilbreths felt that it was more critical to follow a prescribed method or motion pattern. Their efforts were concentrated on reducing the bodily movements required to complete a task, reasoning that reduced completion times would naturally follow from their motion economizing efforts.[9]

In this manner, two schools of thought arose on the correct approach to the problem of increased productivity. The difference between the two was primarily one of emphasis. Perhaps more significant from a historical perspective is the fact that both approaches were based on what was at that time a new principle, namely the application of critical analysis to work methods.[10]

World War II created a need for increased productivity which served to focus attention on the efficiency of operations. It was during these war years that three men from Westinghouse Electric-- H.B. Maynard, G. Stegemertin, and J. Schwab-- set about to find a better way of measuring work. The technique which they ultimately developed, which was dubbed Methods-Time Measurement, united Taylor's emphasis on time study with the Gilbreths' focus on motion.[11]

The applications of work study have spread widely since those war years. As the concept evolved during the 1950s, emphasis shifted to methods improvement in jobs within the service industry. This was followed by systems analysis and design in the 1960s and 1970s. According to the American Institute of Industrial Engineering, work study in the 1980s encompasses the "design, improvement, and installation of integrated systems of men, materials, and equipment."[12]

Growth of Work Study in the Health Care Field

The growth of work study in the health care field paralleled its development within the general business community. Work study techniques were first applied in hospitals shortly after the turn of the century, but only on a limited basis. For example, Gilbreth applied motion economy techniques to such task specific areas as the operating room. Little came of these early attempts, however, as hospitals were thought to be too complex for any large scale application of work study techniques.[13]

Progress was made in the 1940s when Ralph M. Barnes, professor of industrial engineering at the University of Iowa, applied the principles of time and motion study to the field of dentistry. In the later 1940s and early 1950s, analysts began to focus more and more on nursing service because of the high cost of nursing labor. One such application of work study techniques was the work done by Lillian Gilbreth "to find the best means by which to organize hospital nursing service personnel to achieve the most effective patient-centered care."[14]

The real emergence of work study applications in health care occurred during the late 1950s. In addition to studies of nursing service, management engineering techniques were also used in the laboratory, housekeeping department, laundry, and the business office. In 1952 the first hospital management engineer was employed on a full-time basis. By 1958 eleven hospitals had full-time management engineering departments.[15] Today, over 50 percent of the nation's hospitals have management engineering programs of varied degrees of sophistication.

Tools of Work Measurement

There are many techniques utilized for measuring work activity. The basic types are time study, predetermined time systems, technical estimate, historical data, subjective evaluation, and work sampling. These basic types, along with some of their variations, are discussed below.

Time study involves the observation and timing of work as it is being accomplished. Prior to conducting such a study, the work to be measured must be divided into elements for timing. The analyst then watches the task as it is being performed, records the time required to accomplish each element, and rates the pace of the employee performing the operation. A sufficient number of observations must be made to insure statistical accuracy. Percentages covering fatigue and delay are applied to the final average time for each element and the collective value of these element times are then used to determine the allowed time for a particular task.

Time study is most frequently used when the work being measured is highly repetitive in nature, such as that found in a production shop. The technique may be used when the task has a single repeated cycles or a limited variety of cycles. It is of little value, however, when a variety of cycles exist which are not repeated in a short period of time.[16] Additionally, time study is costly due to the large number of observations which are required to get accurate times for establishing staffing standards.[17]

The predetermined time procedure consists of breaking down a particular task into basic motions (similar to therbligs), for which normal time values have been determined through experimentation. The

most common method for measuring the times required to accomplish these basic motions involves the use of a motion picture camera and microfilm analysis. Among the more widely published systems are Methods-Time Measurement, Work-Factor, Basic Motion-Time Study, and Motion-Time Analysis. Regardless of the system utilized, the analyst identifies and classifies each basic motion in the task under study and measures variables associated with the motion, such as distance, degree of rotation, and tolerance. He/she then reads from the table for that basic motion the normal time associated with the values of these physical variables. Finally, the time necessary to perform a task is built up by addition of these normal times.

The use of a predetermined time system is a complex undertaking requiring a highly skilled individual. The analyst must be trained in the use of one of the above systems and must be able to perform a detailed method analysis.[18] While this technique does provide a great deal of detail concerning the operation, it is also quite costly and time consuming.[19]

The technical estimate technique employs the "best educated guess" approach to work measurement. A technical estimate is made by breaking a task into elements and having trained personnel make an estimate of how long each of the elements should take. Individual element times are then aggregated to arrive at the total time required to complete the task under study.

The technical estimate technique is useful to managers in certain situations, such as for estimates needed quickly or when there are task times and frequencies that are particularly difficult to attain using the other work measurement techniques. Although some

use of this technique is frequently required, its sole use is strongly discouraged.[20] Standards based on the use of technical estimate should be considered temporary pending establishment of an engineered standard by a more precise method.[21]

Historical data studies involve accumulating information about time and output from records connected with the operation of a particular activity. The average time per unit of output is calculated and this becomes the "standard." This standard may be used as is or made tighter or looser by applying mathematical adjustment formulas. These formulas are applied in an effort to rate the speed at which an employee is working against what is considered an "average" pace. Adjustments may also take the form of raising the standard by selecting only the faster completion times when computing the average.

Standards from historical data are used in those situations where detailed time measurement is not justifiable because of job variation or cost constraints. Such standards are not exact, but are helpful in providing measurement of the work being performed. While historically-based standards are more reliable than those established through subjective evaluation, they do not provide sufficiently valid results to insure the efficient use of human resources.[22]

Staffing standards determined by subjective evaluation are based on judgment, observation, and past experience. These standards are estimates only and generally deviate from measured standards by about 25 percent.[23] Because of the inaccuracy of this technique, subjective evaluation is not considered to be a particularly desirable method for setting labor standards.

Random sampling techniques are based on the law of probability, which holds that a small number of random occurrences tends to follow the distribution produced by a larger number of occurrences. Such techniques have been used for many years to establish productivity and utilization. The use of random sampling to gather data about the ratio of down time to total time in machine operation is known as "ratio delay." The application of sampling techniques to study human work activity is commonly referred to as "work sampling."[24]

Work sampling involves listing some basic tasks that are performed in the work center and then making random observations to determine the frequency with which they occur. The results of this sampling are converted into percentages of time, and ultimately, minutes or hours spent on the various tasks. The volume of output for each task can then be divided into the sample time to compute an average completion time for each task. These average task times are then used to construct a standard. The work sampling technique is particularly useful in analyzing nonrepetitive or irregularly occurring work activities.[25]

Work sampling has many attractive features as a work measurement tool. It is relatively inexpensive to use and produces results of known reliability and accuracy.[26] Moreover, it can be used to measure virtually any kind of work, does not require trained observers, and may be interrupted without affecting the results of the study. Perhaps most important is the fact that work sampling is the technique usually preferred by the workers being studied.[27]

Choosing a Work Measurement Technique

The selection of an appropriate work measurement technique

depends on the nature of the work being studied, availability of resources, degree of accuracy required, and receptiveness of the workers involved.[28]

In choosing the proper technique, the nature of the work under study must be taken into account. A given task may be more suitable for measurement through the use of one or a combination techniques. Two types of costs are associated with the establishing of work standards, namely the costs related to obtaining measurements and the incurred cost of using inaccurate standards. Selection of a technique should be made so as to achieve a balance between these two categories of expenditures. The acceptability of the measurement technique to the workers being studied must also be considered. Even the most well designed study will fail without the cooperation of the workers concerned.[29]

Subjective evaluation and technical estimate are the techniques most commonly utilized for determining clerical requirements in a hospital setting. These methodologies, while better than none, may result in inaccurate standards and inefficient use of personnel resources. In this era of rising inflation and scarce resources, it is felt that the cost of using these techniques is greater than the cost of obtaining more precise results.

The same objection could be raised to the use of the historical data technique. The principal drawback to establishing historically-based standards in the case at hand, however, is the fact that records of clerical work activity are traditionally not maintained within the hospital.

The complexities involved in using time study or predetermined

time systems to measure clerical work are overwhelming. While you could eventually measure the entire operation through either of these means, the costs would be prohibitive. Experts have concluded that these techniques are not the answer to clerical work measurement.[30]

Much of the work performed by hospital clerical personnel is nonrepetitive, has a relatively long work cycle, and does not follow a clear-cut pattern. This is precisely the type of work which lends itself to work sampling. Work sampling allows for the simultaneous study of several workers, yields information about the total operation, and is the technique most acceptable to the majority of workers.[31]

Conclusion

All things considered, work sampling appears to be the best alternative for measuring clerical work in a hospital setting. In those instances where highly detailed standards are required, this technique is not as suitable as predetermined time or time study. In the case at hand, however, where general operational effectiveness is to be measured, work sampling seems to offer the best balance between accuracy of results and incurred costs.

Footnotes

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[20]U.S. Department of the Army, Army Regulation 570-5, Manpower Staffing Standards Systems (Washington, D.C.: Government Printing Office, April 1984), p. 12-2.

[21]Department of Defense, Defense Supply Agency, Integrated Management Engineering System Manual (Alexandria, Virginia: Department of Defense, 1969), p. II.6.19.

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[24]Hospital Work Measurement (Denver, Colorado: Mountain States Management Engineering Services Activities, [1971]), p. 30.

[25]Roberts, Kualseth, and Jermstad, p. 3.

[26]Robert E. Heiland and Wallace J. Richardson, Work Sampling (New York: McGraw-Hill Book Company, 1957), p. 9.

[27]Roberts, Kualseth, and Jermstad, p. 3.

[28]Ibid., p. 4.

[29]Ibid., p. 5.

[30]Nance and Nolan, p. 170.

[31]Roberts, Kualseth, and Jermstad, p. 5.

CHAPTER II

RESEARCH METHODOLOGY

In order to successfully accomplish the stated objectives of this research effort, a four-phase analysis was conducted.

Phase I- Procedure Survey

During Phase I of the research methodology, a procedure survey of the OB/GYN Clinic was carried out in order to define its organization in functional terms, identify the major tasks performed by the assigned clerical staff, and identify the outputs associated with these major tasks. The following techniques were utilized in obtaining information relevant to the conduct of operations within the OB/GYN Clinic.

1. Selected reference materials were reviewed to acquire a working knowledge of current policies and procedures which govern clinic operations.

2. Existing studies of the OB/GYN Clinic were reviewed to gain familiarity with findings and recommendations made in the past.

3. Key personnel, including the clinic chief, head nurse, noncommisioned officer in charge (NCOIC), and the medical clerks themselves were consulted in order to obtain an appreciation of how the clinic functions.

4. Direct observation was utilized to gain familiarity with the physical layout and day-to-day operation of the OB/GYN Clinic.

During the course of the procedure survey, the four medical

clerks who work in the OB/GYN clinic were asked to submit a list of the tasks which they perform on a regular basis. This information, along with that gained through a review of the clerks job descriptions and performance standards, was then used to prepare task lists for appointment clerks and receptionists, the two broad categories into which the medical clerks fall. Detailed lists of the major tasks that were identified for the appointment clerks and receptionists are shown at Appendices A and B respectively . Appendices A and B also indicate the work units which are associated with the major tasks. Following review and approval of these task lists by the appropriate supervisors, the next phase of the research methodology was ready to begin.

Phase II- Work Volume Measurement

Phase II of the analysis involved determining the volume of work produced by the four medical clerks. Information gathered during the procedure survey revealed that workload data could reasonably be captured on the number of telephone calls and patient contacts "produced" by the appointment clerks. Receptionist workload which was identified for collection included: number of phone calls completed; number of appointed patients received; and number of inquiries handled. Accordingly, a workload recording system was installed, utilizing the forms shown at Appendix C, to gather thenecessary data.

It should be pointed out that a workload recording system was already in existence for the appointment clerks at the time of this study. Examination of this system, however, revealed two major drawbacks. First, rather than counting the number of phone calls

completed, the clerks were recording data regarding the number of transactions handled. To illustrate this point, assume that a patient called the OB/GYN Clinic with the intent of rescheduling her appointment. This would involve cancelling a scheduled appointment (one transaction) and making a new appointment (one transaction). Under the existing system, the clerk would tally two counts for this exchange (two transactions handled) rather than just one (one call received). While this system did provide useful management data to the command group, it did not lend itself to computing the total number of phone calls handled over some fixed period of time. The second drawback to the existing workload recording system was that counts were recorded on a daily, rather than hourly, basis. This made analysis of hourly workload fluctuations a difficult, if not impossible, task. In view of the shortcomings inherent in the existing system, a new workload collection system was installed for use by the appointment clerks.

The installation of work volume measurement was preceded by a briefing to the employees and their supervisors. The investigator explained what the employees were being asked to do and emphasized that their cooperation was vital to the success of the project. It was also stressed that no attempt was being made to single out "underachievers." Rather, management was simply interested in knowing what it was getting from its employees in return for its dollar.

Following a one week trial period, workload was recorded during the four week period 1 September through 26 September 1986. As can be seen at Appendix D, the month of September reflects a period of

"normal" activities within the OB/GYN Clinic. Workload in the clinic during fiscal year 1986 ranged from a low of 2,912 visits in February to a high of 4,033 visits in August, and averaged 3,519 visits per month. While the number of clinic visits recorded for the month of September (3,293) was below the monthly average, it was well within the range of values experienced during the first eleven months of the fiscal year.

Phase III- Work Sampling

Work sampling was the technique selected to determine the amount of time devoted to accomplishing each of the major tasks which the medical clerks perform. Use of this technique also enabled the researcher to quantify the time consumed by the principal nonproductive activities. The five steps listed below were followed in conducting the work sampling phase of this study: (1) the sampling categories were defined; (2) the required number of observations was calculated; (3) the frequency of observations was determined; (4) the observation times were developed; and (5) the observations were made.

The major tasks identified during the procedure survey served as the basis for defining the work sampling categories. These task lists were then supplemented with four additional categories to account for all of the activities in which the medical clerks engage. Complete listings of the sampling categories which were developed for the appointment clerks and receptionists are shown in Appendix E.

To determine the number of observations required for the purposes of this research, the following formula was used:

$$n = \frac{z^2\, p\, (1 - p)}{d^2}$$, where

n = the number of observations required

p = the percent occurrence for a given task

d = the distance of the sample proportion from the true value of the population proportion

z = the confidence coefficient for the standard normal curve

No estimate was available regarding the percentage of time spent on the various tasks under study. Therefore, in order to maximize the number of observations required, a value of .5 was assigned to p. Substituting this value into the above equation gives:

$$n = \frac{z^2\, .5\, (1 - .5)}{d^2} \quad \text{or} \quad \frac{z^2\, (.5)^2}{d^2}$$

In this study, a 95 percent confidence limit was desired. The z value for a confidence coefficient of .95 is 1.96. Substituting 1.96 for z, the equation becomes:

$$n = \frac{(1.96)^2\ (.5)^2}{d^2}$$

Finally, an estimate within 5 percent of the true value of the proportion was desired; thus d = .05. Substituting this value into the equation and solving for n yields:

$$n = \frac{(1.96)^2\ (.5)^2}{(.05)^2} \quad \text{or}$$

$$n = \frac{(3.8416)\ (.25)}{.0025} \quad \text{or}$$

n = 384.16 or 385 observations

Because there were two workers in each job category, namely two appointment clerks and two receptionists, collection of the required number of observations involved 385 divided by two or 193 trips to the workers for observing their activities. In order to smooth out the effect of day-to-day variations in the workload, a decision was made to spread the observations over a one week period. Given that the OB/GYN Clinic operates nine hours per day (0730 - 1630 hours), five days per week, a total of 45 hours were available in which to accomplish the required number of observation trips. Thus, the frequency of observations was calculated as follows:

$$\frac{\text{193 required trips}}{\text{45 hours}} =$$

4.2889 or 5 observation trips per hour

Based on conversations with the workers and their supervisors, it was learned that work activities fluctuated not only by day of the week, but also by hour of the day. Therefore, in order to insure that each hour of the day was equally represented, the stratified sampling technique was employed.

Starting times for the observation trips were selected using the random number table at Appendix F. The two digit numbers contained therein were used to represent minutes, with five numbers being selected for each one hour period from 0800 to 1559 hours. On alternating days, either two or three start times were selected for the period 0730 to 0759 hours and either three or two were chosen for the period 1600 to 1630 hours. In choosing the start times from the random table, all numbers between 60 and 99 were rejected.

Additionally, when two start times fell less than two minutes apart (the approximate time required to complete an observation trip), the second time was discarded and an alternate selected.

The investigator made the observations during the period 22 September through 26 September 1986. All observations were made as instantaneously as possible, with the observer walking past the worker's post, glancing at the worker, and recording on a preprinted form the activity in which the worker was engaged. On those occasions when a worker was observed to be doing two different things at one time, the activity in which she appeared to be most actively engaged was recorded. All conversations between the clerks and their coworkers were considered to be in the line of duty.

Examples of the observation forms utilized for the appointment clerks and receptionists are shown at Appendix G. The observations were recorded simply by placing an "x" in the block corresponding to the appropriate activity and observation start time. In order to prevent observer bias, the investigator strictly adhered to the random schedule established for the observations. Additionally, observation routes were varied to minimize the "Hawthorne" effect.

At the end of each day, the results of the observations were tallied by hour of the day. The number of hours during which the employees under study were present and available for work was also noted. The man-hours sampled excluded annual and sick leave, but included the time spent at lunch as the appointment and reception desks are both staffed during the lunch period. Examples of the daily recapitulation sheets utilized for the appointment clerks and receptionists are shown at Appendix H.

Phase IV- Computation of Staffing Standards

During Phase IV of the research methodology, staffing standards for the appointment clerks and receptionists were developed. The procedure followed in constructing these standards was relatively simple. The man-hours devoted to each productive task were divided by the average number of work units produced on a weekly basis to determine the leveled hours per work unit. A 16 percent allowance factor was then applied in order to account for unavailable time . The result of this calculation was the standard hours per work unit for each task. Finally, these standard task accomplishment times were aggregated to form staffing standard equations for the appointment clerks and receptionists.

Although relatively straightforward, certain aspects of the above calculations deserve further comment. First, several of the tasks accomplished by the workers under study had no work units associated with them. For those particular tasks, the total number of man-hours worked (sampled hours minus the time spent at lunch) was used as the work units for the standard. Standard task times were computed by dividing the number of hours devoted to each task by the total number of man-hours worked. An allowance for unavailable time was then added as described above.

Second, the allowance factor utilized to account for nonavailable time was based on the current Army Availability Factor (AAF). The AAF for civilian personnel assigned to fixed medical treatment facilities has recently been established as 145 man-hours per month. This equates to a nonproductive factor of approximately 16 percent.

Third, no allowance for personal time, fatigue and delay (PF&D) was included in the computation of time standards. This was the case due to the nature of the methodology employed in conducting the work sampling phase of this study. All observations recorded in the "away from desk" category, which included trips to the rest room and time spent on breaks, were counted as productive time during work sampling. Moreover, because recordings were made of what actually happened over a representative period of time, the activity completion times which were noted reflect the effects of worker fatigue and delay. These factors obviated the need to include a special allowance for PF&D when calculating standard task accomplishment times.

Following the development of standards for the appointment clerks and receptionists, collected workload and manpower data were substituted into the constructed equations to identify staffing requirements. Present staffing (expressed in terms of man-hours worked) was then compared to calculated man-hour requirements in order to quantify the difference between the two.

CHAPTER III

DISCUSSION

Findings specific to the research objectives are set forth in this chapter. To facilitate a complete understanding of these findings, the results of each phase of the research methodology are presented separately before any general conclusions are drawn.

Results of Procedure Survey

The organizational chart at Appendix I shows that OB/GYN operates as a service within the Department of Surgery. However, local command policy has granted departmental status to OB/GYN and continues to support this decision by detailing an administrative noncommissioned officer (ANCO) to the service. The two appointment clerks who work full-time in the OB/GYN Clinic are assigned to the Patient Appointment Service (PAS). The clinic also houses the Midwifery Service which is organizationally under the Department of Nursing.

Functions of the OB/GYN Service are described in Fort Campbell Medical Department Activity Regulation (FC MEDDAC Reg) 10-1, Organization and Functions, dated 8 July 1985. Major functions of the service include:

1. Performing diagnostic service, care, and treatment for all female patients referred to the clinic.

2. Providing counseling and education for the promotion and maintenance of health.

3. Performing operative and outpatient procedures.

4. Performing medical research.

The OB/GYN Service had 20 recognized manpower requirements and authorizations for 19 personnel on Table of Distribution and Allowances (TDA) HSW2LBAA, effective date 2 October 1986. As of 30 September 1986, 20 personnel were assigned to the clinic. Included in these figures were the two medical clerks (receptionists) who manned the front desk of the clinic. Not included, however, were the two appointment clerks who are assigned to the PAS but worked in the OB/GYN Clinic on a full-time basis.

The OB/GYN Clinic is located on the second floor of "C" Building, BACH. It is a modern, well-equipped clinic comprised of 32 office/exam rooms plus a variety of additional rooms designed for special procedures, storage, meetings and the like. Although located in a separate building from Labor and Delivery and the Post Partum unit, the OB/GYN Clinic is connected to these areas by a dedicated corridor.

Hours of clinic operation are 0730 to 1630 hours, Monday through Friday. The clinic operates primarily on an appointment basis, although provisions are made to treat patients who present with emergent problems (acute and heavy bleeding, acute pelvic pain, acute vaginitis, etc.) on a same day basis. Patients with more routine problems, for example flu, common cold, or simple vaginitis, are referred to the appropriate primary care clinic for treatment.

Both OB and GYN appointments are on the PAS. A seperate telephone appointment line and one PAS clerk have been dedicated to managing each of these two types of appointments. Initial OB/GYN appointments are made by calling the appropriate appointment clerk.

Return appointments are scheduled on a "walk out" basis as follows:

1. The health care provider initiates a return appointment slip by completing his/her name, type of appointment required by the patient, and time frame in which the appointment should be scheduled.

2. The patient then completes certain demographic data on the appointment slip and takes it to the appointment clerk.

3. Depending on the availability of appointments, the appointment clerk either schedules a return appointment immediately or files the appointment slip and notifies the patient when an appointment becomes available.

OB/GYN patients are received at the front desk by either one of the two assigned receptionists. The receptionist greets the patient, verifies her eligibility for care, and signs the patient in on a clinic log sheet. At this time the receptionist also reviews the patient's medical record to insure that administrative data is complete and initiates Standard Form (SF) 600, Chronological Record of Medical Care. The patient is then directed to the vital signs area.

In addition to receiving patients, the receptionists perform a variety of administrative tasks in support of the clinic. Included in these duties are: providing phone coverage, typing, assembling inpatient charts, administrative filing, answering inquiries, and processing incoming and outgoing distribution.

Results of Work Volume Measurement

A listing of the workload data collected for the appointment clerks is contained in Appendix J. Appendix K contains similar data for the clinic receptionists. This data was compiled from the daily

workload figures as reported by the workers under study. Periodic checks were made by the investigator to determine the accuracy of the recorded workload data. As no discrepancies were found during these spot checks, it was determined that the appointment clerks and receptionists were recording the data accurately.

Although workload was recorded over a four week (20 work-day) period, data was successfully captured for the appointment clerks on only 17 of these days. Of the remaining three days, one day was a holiday and workload recording sheets were misplaced by the clerks on the other two. In the case of the receptionists, two days of data were not captured for similar reasons.

Total workload recorded for the period under study is summarized in Table 1 below.

TABLE 1

WORKLOAD TOTALS FOR THE PERIOD
1 SEPTEMBER THROUGH 26 SEPTEMBER 1986

Employee Category	Phone Calls	Patient Contacts	Patients Received	Inquiries Handled	Total Transactions
Appointment Clerks	4217	1368	NA	NA	5585
Reception-ists	2736	NA	2366	3085	8157

Analysis of Appointment Clerk Workload

Information relative to the volume and flow of work produced by the appointment clerks is presented in Figures 1 through 4 which follow.

Average daily phone calls and patient contacts by day of the week are displayed in Figure 1.

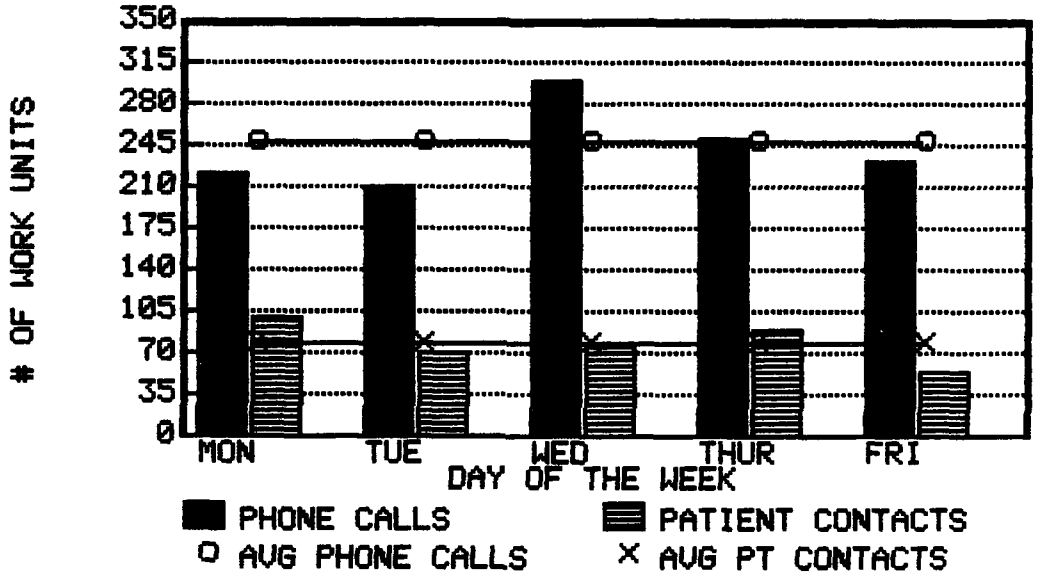


Fig. 1. Average daily workload by day of the week for appointment clerks.

Figure 1 shows that the average number of calls handled by the two appointment clerks ranged from a low of 210 per day (on Tuesdays) to a high of about 300 per day (on Wednesdays). Phone calls averaged nearly 250 per day for the period under study. Figure 1 also indicates that the average number of patient contacts fluctuated in the range from about 55 per day (on Fridays) to approximately 100 per day (on Mondays). Patient contacts averaged just over 80 per day during the period in question.

In Figure 2, average daily phone calls and patient contacts have been combined to show "total transactions" accomplished by day of the week. Figure 2 shows that Wednesdays and Thursdays represent peak periods of workload for the appointment clerks.

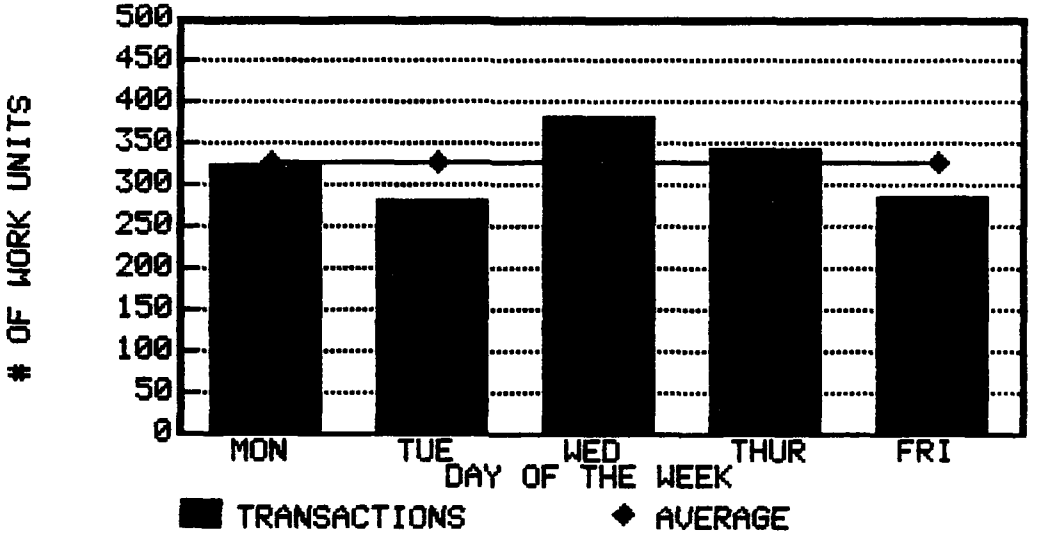


Fig. 2. Total transactions accomplished by day of the week for appointment clerks.

The average number of phone calls and patient contacts encountered by hour of the day is presented in Figure 3. Figure 4 presents the number of "total transactions" accomplished by the appointment clerks on an hourly basis. As can be seen from Figures 3 and 4, workload follows a cyclical pattern. It rises during the early hours of the morning, reaching a peak from 1000 to 1100 hours, and then declines during the lunch time frame. Workload reaches a secondary peak between 1300 and 1400 hours and then tapers off throughout the remainder of the afternoon.

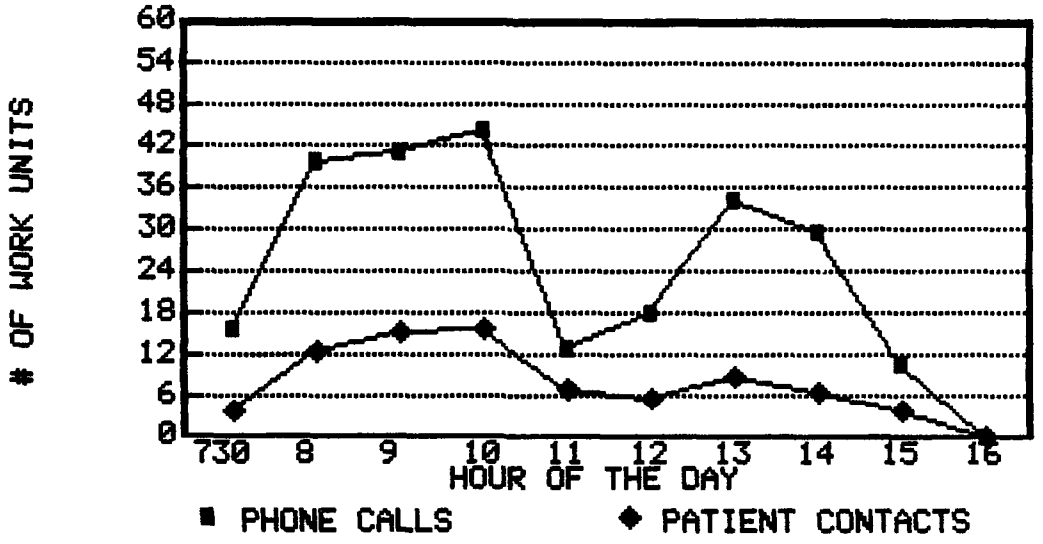


Fig. 3. Average daily workload by hour of the day for appointment clerks.

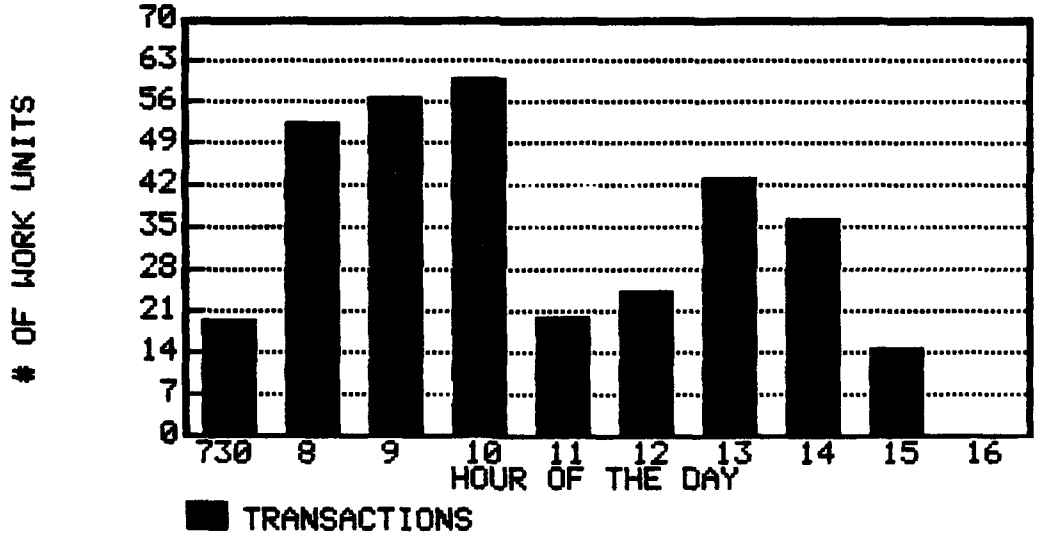


Fig. 4 Total transactions accomplished by hour of the day for appointment clerks.

Analysis of the data also revealed that the distribution of workload between the two appointment clerks was quite equalized. During the study period, a total of 5,585 transactions (telephone calls plus patient contacts) were accomplished by the clerks. Of this total, 2,738 (49 percent) were attributable to clerk A while 2,847 (51 percent) were attributable to clerk B.

Analysis of Receptionist Workload

Information pertinent to the assessment of receptionist workload is presented in Figures 5 through 8 which follow.

Displayed in Figure 5 is a comparison of average daily phone calls, patients received, and inquiries handled by day of the week.

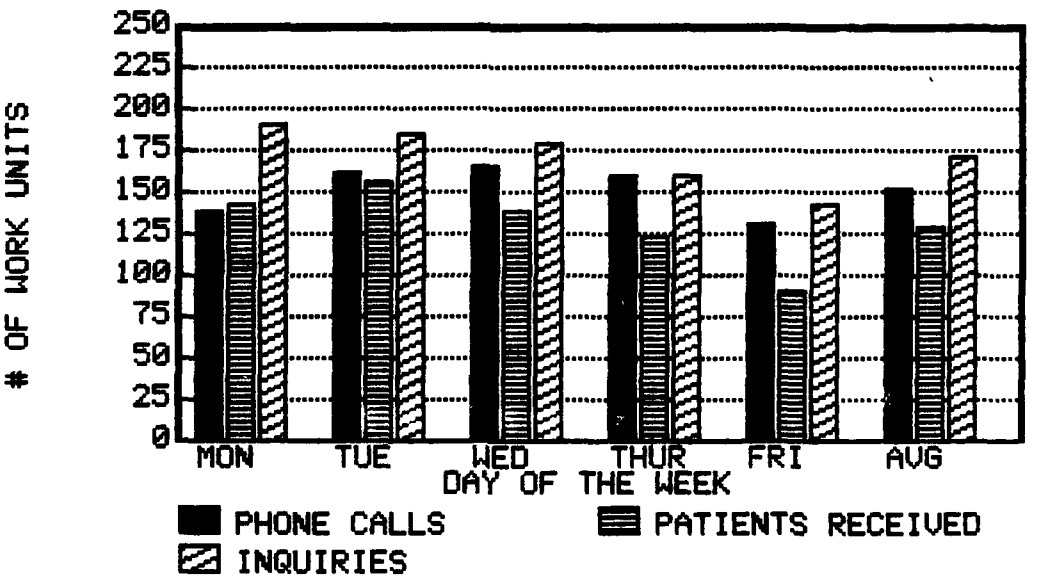


Fig. 5. Average daily workload by day of the week for receptionists.

As shown the average number of phone calls answered by the two receptionists ranged from about 133 per day (on Fridays) to approximately 167 per day (on Wednesdays). The greatest number of patients were received on Tuesdays (156 per day average), while the fewest number were received on Fridays (approximately 92 per day average). Figure 5 also indicates that more inquiries were handled on Mondays (nearly 192 per day average) than on any other day of the week. When all days of the week are considered, the average number of phone calls answered, patients received, and inquiries handled on a daily basis was approximately 152, 130, and 171 respectively.

"Total transactions", a combination of the three workload elements identified above, are shown in Figure 6. This particular graph points out that, on average, the receptionists accomplished more total work units on Tuesdays than on any other day of the week.

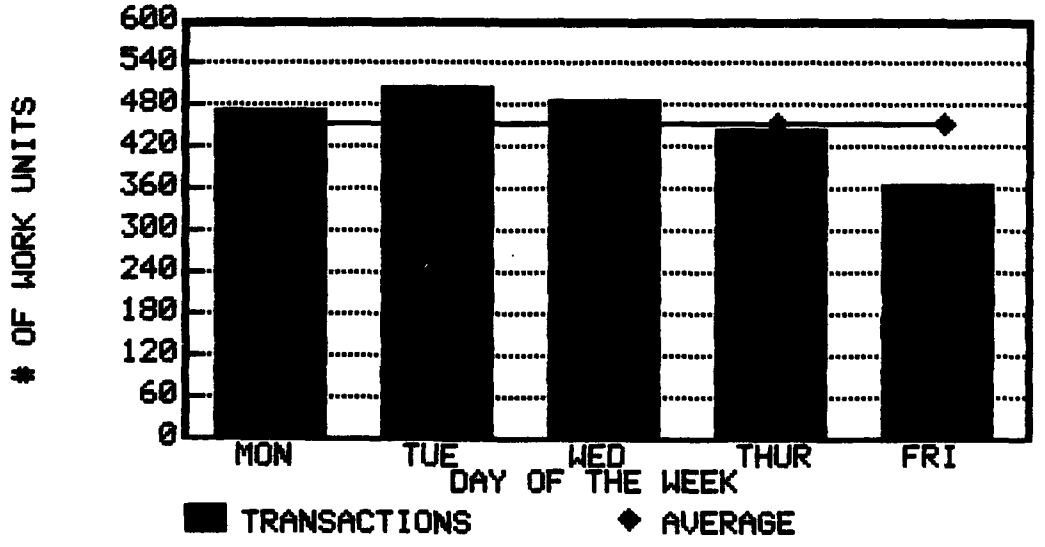


Fig. 6. Total transactions accomplished by day of the week for receptionists.

Average daily phone calls, patients received, and inquiries handled by hour of the day are shown in Figure 7, while Figure 8 depicts "total transactions" accomplished by the receptionists on an hourly basis.

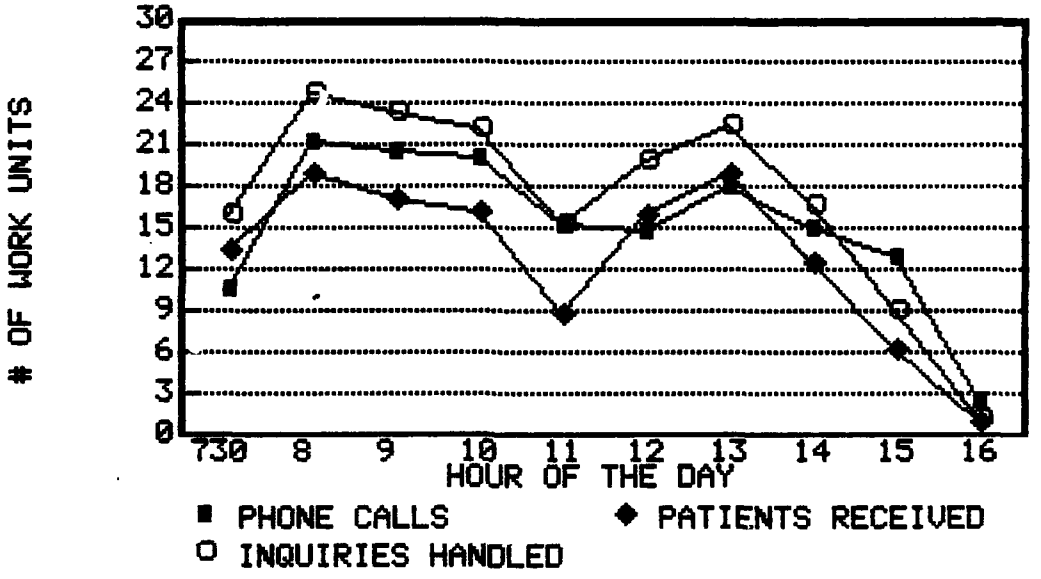


Fig. 7. Average daily workload by hour of the day for receptionists.

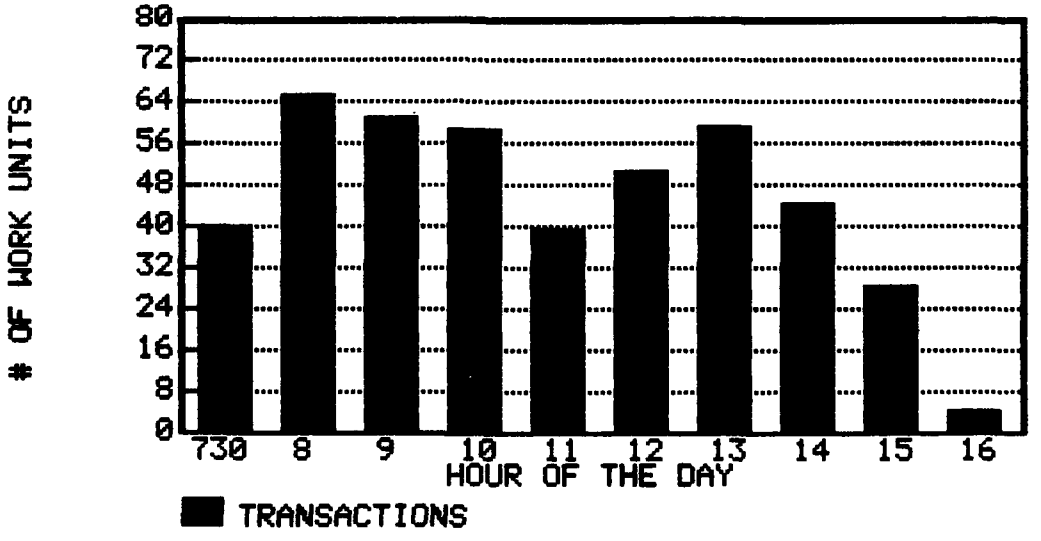


Fig. 8. Total transactions accomplished by hour of the day for receptionists.

Figures 7 and 8 highlight the fact that receptionist workload follows a bimodel distribution similar to that recorded for the appointment clerks. Workload peaks between the hours of 0800 and 0900, with a secondary peak occurring during the 1300 to 1400 hours time frame.

As was the case with the appointment clerks, workload was fairly evenly distributed between the two receptionist personnel. Of the 8,157 "total transactions" accomplished during the course of the study, 3,951 (48 percent) were accomplished by receptionist A while 4,206 (52 percent) were accomplished by receptionist B.

Results of Work Sampling

A listing of the observations made by the investigator of the appointment clerks is enclosed in Appendix L. Observations recorded for the receptionists can be found at Appendix M. During the one week period sampled, 420 observations were made of the appointment clerks while 431 were made of the receptionists. Three observation trips were missed during this period resulting in the loss of six observations for each category of worker. The number of work hours sampled for the appointment clerks and receptionists totaled 85.75 and 87.50 respectively.

The distribution of working time observed for the appointment clerks and receptionists is shown in Tables 2 and 3. Analysis of the data in Table 2 reveals that the appointment clerks spent 39 percent of their time, plus or minus 4.7 percent, on the telephone. This figure indicates that, with 95 percent confidence, the true amount of time spent on the telephone was between 34.3 and 43.7 percent. Approximately 18.6 percent of the appointment clerks' time was devoted to records preparation/maintenance, while slightly over 9

percent was consumed by patient contacts. The remainder of the clerks' time was fairly evenly divided between the following categories: talking to coworkers, lunch, idle, and away from their desk.

TABLE 2

DISTRIBUTION OF WORKING TIME
APPOINTMENT CLERKS

Task	Number of Observations	Percent of Observations	Confidence Limit at 95% Level	Total Hours Spent in Activity
Patient Contact	38	9	± 2.7%	7.76
Telephone Contact	164	39	± 4.7%	33.48
Records Preparation/ Maintenance	78	18.6	± 3.7%	15.93
Talking to Staff Members	37	8.8	± 2.7%	7.55
Away From Desk	32	7.6	± 2.5%	6.53
Idle	34	8.1	± 2.6%	6.94
Lunch	37	8.8	± 2.7%	7.55
TOTAL	420	99.9	-	85.75

Table 3 shows that the receptionists spent the greatest portion of their time (18.6 percent, plus or minus 3.7 percent) on records preparation/maintenance. Just over 16 percent of their time was spent away from the reception desk, while 13.2 percent was

devoted to both receiving patients and talking to other staff members. The receptionists spent nearly 12 percent of their time on the telephone, 8.6 percent answering inquiries, and 8.4 percent eating lunch. Less than 5 percent of the receptionists' time was utilized in the following categories: idle, typing, and processing distribution.

TABLE 3

DISTRIBUTION OF WORKING TIME
RECEPTIONISTS

Task	Number of Observations	Percent of Observations	Confidence Limit at 95% Level	Total Hours Spent in Activity
Receive Patient	57	13.2	± 3.2%	11.57
Answer Inquiry	37	8.6	± 2.6%	7.51
Telephone Contact	51	11.8	± 3%	10.35
Records Preparation/ Maintenance	80	18.6	± 3.7%	16.24
Typing	17	3.9	± 1.8%	3.45
Process Distribution	7	1.6	± 1.2%	1.42
Talking to Staff Members	57	13.2	± 3.2%	11.57
Away From Desk	70	16.2	± 3.5%	14.21
Idle	19	4.4	± 1.9%	3.86
Lunch	36	8.4	± 2.6%	7.31
TOTAL	431	99.9	-	87.50

As mentioned previously, the objective of the work sampling phase was to determine the number of hours spent on the various activities in which the medical clerks engage. Total man-hours devoted to each activity were computed by multiplying the percent of total observations in each sampling category by the total number of man-hours sampled. The results of these calculations are listed in the extreme right hand column of Tables 2 and 3.

Results of Staffing Standards Computation

Tables 4 and 5 detail the computations which were made in arriving at standard times for the productive tasks performed by the appointment clerks and receptionists.

TABLE 4

COMPUTATION OF STANDARD TASK TIMES FOR APPOINTMENT CLERKS

(a) Productive Task	(b) Work Units (Avg/Week)	(c) Man-Hours Spent in Activity	(d) Leveled Hours per Work Unit (c/b)	(e) Allowance (AAF)	(f) Standard Hours per Work Unit (dxe)
Patient Contact	402	7.76	.0193	1.16	.0224
Telephone Contact	1240	33.48	.0270	1.16	.0313
Records Preparation/ Maintenance	78.2 hours	15.93	.2037	1.16	.2363
Talking to Staff Members	78.2 hours	7.55	.0965	1.16	.1119
Away from Desk	78.2 hours	6.53	.0835	1.16	.0969

TABLE 5

COMPUTATION OF STANDARD TASK TIMES FOR RECEPTIONISTS

(a) Productive Task	(b) Work Units (Avg/Week)	(c) Man-Hours Spent in Activity	(d) Leveled Hours per Work Unit (c/b)	(e) Allowance (AAF)	(f) Standard Hours per Work Unit (dxe)
Receive Patient	649	11.57	.0178	1.16	.0206
Answer Inquiry	857	7.51	.0088	1.16	.0102
Telephone Contact	760	10.35	.0136	1.16	.0158
Records Preparation/ Maintenance	80.2 hours	16.24	.2025	1.16	.2349
Typing	80.2 hours	3.45	.0430	1.16	.0499
Process Distribution	80.2 hours	1.42	.0177	1.16	.0205
Talking to Staff Members	80.2 hours	11.57	.1443	1.16	.1674
Away from Desk	80.2 hours	14.21	.1772	1.16	.2056

Utilizing the standard times presented in Table 4, the following manpower staffing standard was developed for the appointment clerks:

$$Y_a = .0224\ (X_1) + .0313\ (X_2) + .2363\ (X_3) +$$
$$.1119\ (X_3) + .0969\ (X_3) \quad \text{or}$$

$$Y_a = .0224\ (X_1) + .0313\ (X_2) + .4451\ (X_3)$$

where:

Y_a = the number of standard man-hours of coverage required

X_1 = the number of patient contacts completed

X_2 = the number of telephone calls handled

X_3 = the number of man-hours worked

Aggregation of the standard time values in Table 5 yielded the following staffing equation for the receptionists:

$$Y_r = .0206\ (Z_1) + .0102\ (Z_2) + .0158\ (Z_3) + .2349\ (Z_4) + .0499\ (Z_4) + .0205\ (Z_4) + .1674\ (Z_4) + .2056\ (Z_4) \quad \text{or}$$

$$Y_r = .0206\ (Z_1) + .0102\ (Z_2) + .0158\ (Z_3) + .6783\ (Z_4)$$

where:

Y_r = the number of standard man-hours of coverage required

Z_1 = the number of patients received

Z_2 = the number of inquiries answered

Z_3 = the number of telephone calls completed

Z_4 = the number of man-hours worked

In order to assess the appropriateness of medical clerk staffing in the OB/GYN Clinic, the above staffing equations were

applied to the work units produced during the period under study to obtain the standard man-hours of coverage required. A comparison of required man-hours to man-hours actually worked was then made to determine whether or not there was a significant difference between the two. In accordance with the criteria established for this study, a difference of plus or minus 10 percent was to be considered significant.

Utilizing the work unit values from Table 4 and the appropriate staffing equation, the required amount of appointment clerk coverage was calculated as follows:

standard man-hours required = .0224 (402) + .0313 (1240) + .4451 (78.2) or

standard man-hours required = 82.6

Substitution of the work unit counts from Table 5 into the staffing equation for receptionist coverage yielded:

standard man-hours required = .0206 (649) + .0102 (857) + .0158 (760) + .6783 (80.2) or

standard man-hours required = 88.5

The remaining computations made in comparing standard man-hour requirements to man-hours actually worked are summarized in Table 6. This table shows that when the two categories of medical clerks are considered together, the difference between man-hours worked and man-hours of coverage required is approximately minus 8 percent.

This value is considered to be non-significant based on the preestablished criteria of plus or minus 10 percent. When the two groups are analyzed separately, however, the data indicates that a significant difference does exist between present receptionist staffing and calculated staffing requirements. The magnitude of this difference is approximately minus 10 percent, which equates to a shortfall of about eight man-hours of receptionist coverage on a weekly basis.

TABLE 6

COMPARISON OF MAN-HOURS ACTUALLY WORKED TO STANDARD MAN-HOUR REQUIREMENTS

(a) Employee Category	(b) Man-Hours Worked	(c) Standard Man-Hours Required	(d) Difference (b-c)	(e) Percentage Difference (d/c x100)
Appointment Clerks	78.2	82.6	-4.4	-5.6
Receptionists	80.2	88.5	-8.3	-10.3
TOTAL	158.4	171.1	-12.7	-8

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A general conclusion of this research effort is that the principles of work study can be effectively utilized to establish medical clerk requirements in the ambulatory care area. The basic methodology developed for the OB/GYN Clinic was successful in meeting the study objectives: it was well received by the employees under study, it can be executed by mid-level supervisory personnel, and it is adaptable for use within the remaining outpatient clinics at BACH. A specific conclusion which resulted from the study is that an insufficient amount of receptionist coverage is currently available within the OB/GYN Clinic. Appointment clerk coverage, on the other hand, is adequate.

Application of the above methodology to the remaining outpatient clinics at BACH would enable the administration to gauge overall medical clerk requirements within the ambulatory care area. This provides latitude to hospital management in determining at what level a particular work center should be staffed. While the actual distribution of clerks is ultimately a command decision, managers are now in a position to propose staffing based on what is essential and justifiable, rather than based on conjecture as has often been the case in the past.

Recommendations

In light of the observations and results of this project, the following recommendations are made:

1. An additional eight man-hours of coverage should be provided to the OB/GYN reception desk on a weekly basis. The time periods during which this supplemental coverage is most needed include early morning and early afternoon, Monday through Wednesday.

2. The NCOIC, OB/GYN should monitor the time which the receptionists spend away from their desk to insure that it is utilized in a productive manner. Assigned duties that remove the clerks from the clinic should be investigated to determine which, if any, could be consolidated or eliminated.

3. Workload recording systems similar to those described herein should be installed within all outpatient clinics at BACH. In addition to providing a great deal of insight into the volume and flow of clerical work, the collection of such data also serves to stimulate employee productivity in many cases.

4. Clinic NCOICs should conduct work sampling studies of the administrative support personnel within their respective areas of responsibility. These studies would serve a dual purpose of collecting time utilization data as well as stimulating interest in "management analysis." By extending individual studies over a two or three week period of time, interference with regular supervisory duties can be minimized.

5. Captured workload and time utilization data should be used to establish clerical staffing standards for each clinic. A comparison between present staffing and projected requirements should

then be made to identify personnel overages and shortages.

6. As a long range fix, requests for additional manpower requirements should be submitted to Health Services Command for those clinics found to be understaffed. In the short term, supplemental coverage should be provided from other inhouse clinics or from a temporary manpower pool established specifically for this purpose.

7. Staffing standards should be incorporated into the employees' performance standards and conformance to these standards should be evaluated on a periodic basis. Those employees who consistently surpass established performance levels should be considered for monetary incentive awards.

8. As procedures within the clinics change over time, staffing standards should be revised and updated to reflect these changes.

APPENDIX A

TASK LIST FOR APPOINTMENT CLERKS

TASK LIST FOR
APPOINTMENT CLERKS

Task	Description	Work Unit
1. Patient Contact	a. Schedules patient appointments on a "walk-out" basis.	Number of patient contacts
	b. If appointment not available, files referral slip and instructs patient that she will be contacted when an appointment becomes available.	
2. Telephone Contacts	a. Schedules, verifies, cancels, and re-schedules patient appointments via telephone.	Number of phone calls
	b. Provides both appointment-related and general information to patients.	
	c. Calls in schedule changes to clinic personnel.	
	d. Places outgoing calls as required.	
3. Records Preparation/ Maintenance	a. Records suspense date on return appointment slips and files slips by suspense date.	None
	b. Records workload statistics.	
	c. Prepares appointment schedules based on input from providers.	
	d. Pulls appoitment sheets for following day's appointments.	

Task	Description	Work Unit
3. Records Preparation/ Maintenance (cont.)	e. Books initial OB physicals from appoint slips initiated during OB orientation class.	
	f. Maintains a list of patients with abnormal pap smear results.	

APPENDIX B

TASK LIST FOR RECEPTIONISTS

TASK LIST FOR
RECEPTIONISTS

Task	Description	Work Unit
1. Receive Patient	a. Receives appointed and emergency walk-in patients.	Number of patients
	b. Directs patients to vital signs area.	
2. Answers Inquiry	a. Answers questions regarding clinic policies and procedures.	Number of Inquiries
	b. Provides directions to other hospital clinics.	
3. Telephone Contacts	a. Receives calls from patients and staff, provides information or refers caller to appropriate source.	Number of phone calls
	b. Coordinates telephonically with Pathology, Radiology and Outpatient Records.	
	c. Places outgoing calls as required.	
4. Records Preparation/ Maintenance	a. Prepares lab work for pre-op and pregnancy tests.	None
	b. Sorts lab test results.	
	c. Maintains surgery charts.	
	d. Assembles medical records for next day's appointments.	

Task	Description	Work Unit
4. Records Preparation/ Maintenance (cont.)	e. Compiles workload statistics.	
	f. Files correspondence.	
5. Typing	Types a variety of forms and routine correspondence.	None
6. Process Distribution	Processes incoming and outgoing distribution via pneumatic tube system.	None

APPENDIX C

WORKLOAD RECORDING FORMS:
APPOINTMENT CLERKS AND RECEPTIONISTS

POSITION- APPOINTMENT CLERK
CLINIC- OB/GYN
EMPLOYEE'S NAME-
DAY/DATE-

WORKLOAD RECORDING FORM

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259		
1300-1359		
1400-1459		
1500-1559		
1600-1630		

POSITION- RECEPTIONIST
CLINIC- OB/GYN
EMPLOYEE'S NAME-
DAY/DATE-

WORKLOAD RECORDING FORM

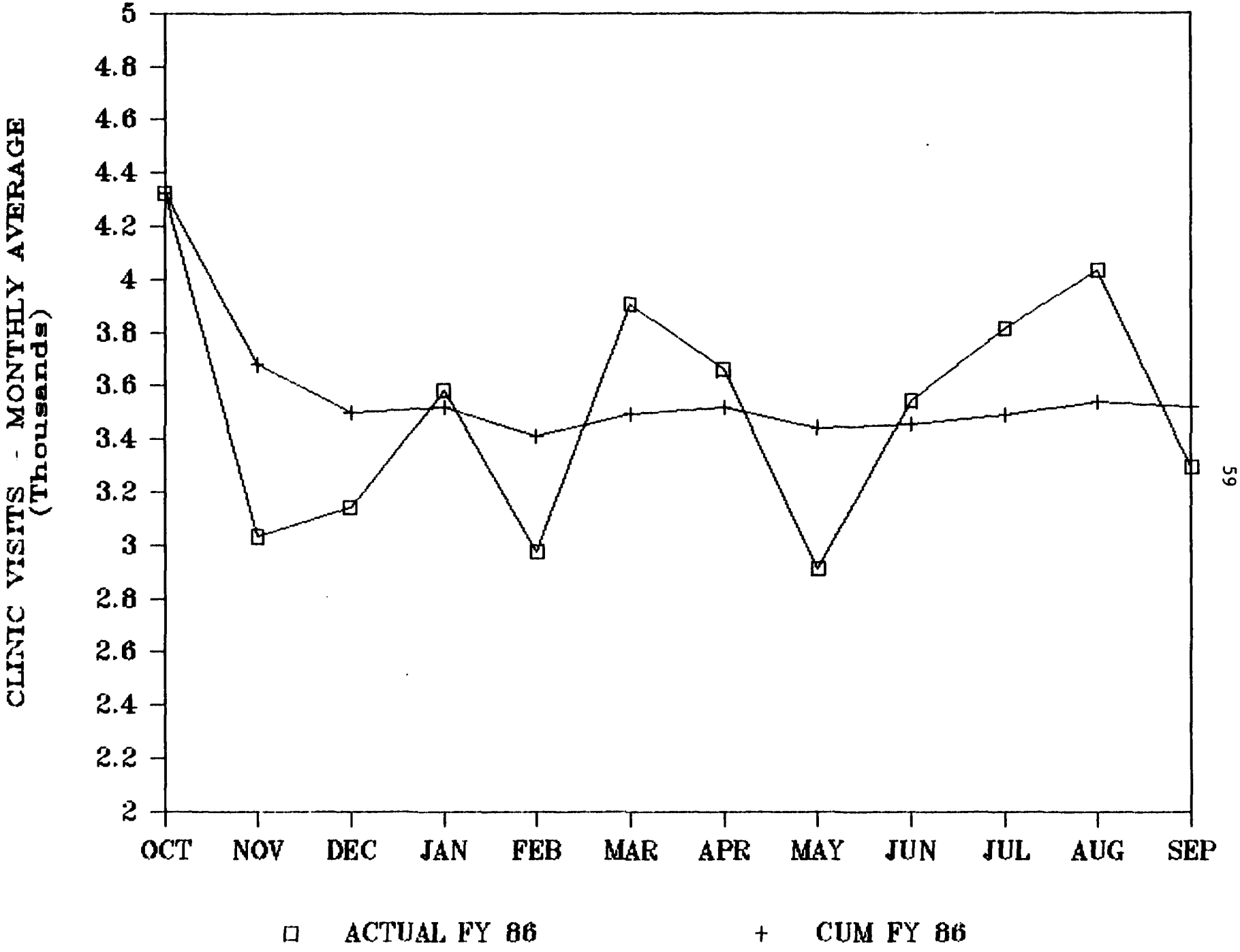
TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259			
1300-1359			
1400-1459			
1500-1559			
1600-1630			

APPENDIX D

MONTHLY CLINIC VISITS PRODUCED BY THE OBSTETRICS/GYNECOLOGY CLINIC DURING FISCAL YEAR 1986

OB/GYN CLINIC

BACH



APPENDIX E

WORK SAMPLING CATEGORIES FOR APPOINTMENT CLERKS AND RECEPTIONISTS

WORK SAMPLING CATEGORIES FOR APPOINTMENT CLERKS AND RECEPTIONISTS

Appointment Clerks

Category	Description
1. Patient Contact	Same as Appendix A.
2. Telephone Contact	Same as Appendix A.
3. Records Preparation/ Maintenance	Same as Appendix A.
4. Talking to Staff Members	Conferring with other staff members.
5. Away from Desk	Errands, breaks (excluding lunch), and personal time.
6. Idle	Waiting for work; resting.
7. Lunch	Self-explanatory.

Receptionists

Category	Description
1. Receive Patient	Same as Appendix B.
2. Answer Inquiry	Same as Appendix B.
3. Telephone Contact	Same as Appendix B.
4. Records Preparation/ Maintenance	Same as Appendix B.
5. Typing	Same as Appendix B
6. Process Distribution	Same as Appendix B.
7. Talking to Staff Members	Conferring with other staff members.
8. Away from Desk	Errands, breaks (excluding lunch), and personal time.
9. Idle	Waiting for work; resting.
10. Lunch	Self-explanatory.

APPENDIX F

RANDOM NUMBER TABLE

RANDOM NUMBERS

22	17	68	65	84	68	95	23	92	35	87	02	22	57	51	61	09	43	95	06	58	24	82	03	47
19	36	27	59	46	13	79	93	37	55	39	77	32	77	09	85	52	05	30	62	47	83	51	62	74
16	77	23	02	77	09	61	87	25	21	28	06	24	25	93	16	71	13	59	78	23	05	47	47	25
78	43	76	71	61	20	44	90	32	64	97	67	63	99	61	46	38	03	93	22	69	81	21	99	21
03	28	28	26	08	73	37	32	04	05	69	30	16	09	05	88	69	58	28	99	35	07	44	75	47
93	22	53	64	39	07	10	63	76	35	87	03	04	79	88	08	13	13	85	51	55	34	57	72	69
78	76	58	54	74	92	38	70	96	92	52	06	79	79	45	82	63	18	27	44	69	66	92	19	09
23	68	35	26	00	99	53	93	61	28	52	70	05	48	34	56	65	05	61	86	90	92	10	70	80
15	39	25	70	99	93	86	52	77	65	15	33	59	05	28	22	87	26	07	47	86	96	98	29	06
58	71	96	30	24	18	46	23	34	27	85	13	99	24	44	49	18	09	79	49	74	16	32	23	02
57	35	27	33	72	24	53	63	94	09	41	10	76	47	91	44	04	95	49	66	39	60	04	59	81
48	50	86	54	48	22	06	34	72	52	82	21	15	65	20	33	29	94	71	11	15	91	29	12	03
61	96	48	95	03	07	16	39	33	66	98	56	10	56	79	77	21	30	27	12	90	49	22	23	62
36	93	89	41	26	29	70	83	63	51	99	74	20	52	36	87	09	41	15	09	98	60	16	03	03
18	87	00	42	31	57	90	12	02	07	23	47	37	17	31	54	08	01	88	63	39	41	88	92	10
88	56	53	27	59	33	35	72	67	47	77	34	55	45	70	08	18	27	38	90	16	95	86	70	75
09	72	95	84	29	49	41	31	06	70	42	38	06	45	18	64	84	73	31	65	52	53	37	97	15
12	96	88	17	31	65	19	69	02	83	60	75	86	90	68	24	64	19	35	51	56	61	87	39	12
85	94	57	24	16	92	09	84	38	76	22	00	27	69	85	29	81	94	78	70	21	94	47	90	12
38	64	43	59	39	98	77	87	68	07	91	51	67	62	44	40	98	05	93	78	23	32	65	41	18
53	44	09	42	72	00	41	86	79	70	60	47	22	00	20	35	55	31	51	51	00	83	63	22	55
40	76	66	26	34	57	99	99	90	37	36	63	32	08	58	37	40	13	68	97	87	64	81	07	83
02	17	79	18	05	12	59	52	57	02	22	07	90	47	03	28	14	11	30	79	20	69	22	40	98
95	17	82	06	53	31	51	10	96	46	92	06	88	07	77	56	11	50	81	69	40	23	72	51	38
35	76	22	42	92	96	11	83	44	80	34	60	35	48	77	33	42	40	90	60	73	96	53	97	86
26	29	13	50	41	65	47	04	66	02	34	72	57	59	13	82	43	80	46	15	38	26	61	70	04
77	80	20	75	82	72	82	32	99	90	63	95	73	76	63	89	73	44	99	05	48	67	26	43	18
46	40	66	44	52	91	36	74	43	53	30	82	13	54	00	78	45	63	98	35	55	03	36	67	60
37	56	08	18	09	77	53	84	46	47	31	91	18	95	58	24	16	74	11	53	44	10	13	85	57
61	65	61	68	66	37	27	47	39	10	84	83	70	07	48	53	21	40	06	71	95	06	79	88	54
93	43	69	64	07	34	18	04	52	35	56	27	09	24	86	61	85	53	83	45	19	90	70	99	00
21	96	60	12	99	11	20	99	45	18	48	13	93	55	34	18	37	79	49	90	65	97	38	20	46
95	20	47	97	97	27	37	83	28	71	00	06	41	41	74	45	89	09	39	84	51	67	11	52	48
97	86	21	78	73	10	65	81	92	59	58	76	17	14	97	04	76	62	16	17	17	95	70	45	80
69	92	06	34	13	59	71	74	17	32	27	55	10	24	19	23	71	82	13	74	63	52	52	01	41
04	31	17	21	56	33	73	99	19	87	26	72	39	27	67	53	77	57	68	93	60	61	97	22	61
61	06	98	03	91	87	14	77	43	96	43	00	65	98	50	45	60	33	01	07	98	99	46	50	47
85	93	85	06	00	72	87	08	62	40	16	06	10	89	20	23	21	34	74	97	76	38	03	29	63
21	74	32	47	45	73	96	07	94	52	09	65	90	77	47	25	76	16	19	33	53	05	70	53	30
15	69	53	82	80	79	96	23	53	10	35	39	07	16	29	45	33	02	43	70	02	87	40	41	45

APPENDIX G

WORK SAMPLING OBSERVATION FORMS: APPOINTMENT CLERKS AND RECEPTIONISTS

WORK SAMPLING FORM
APPOINTMENT CLERKS

TIME OF OBS	1	2	3	4	5	6	7					

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

WORK SAMPLING FORM
RECEPTIONISTS

TIME OF OBS	1	2	3	4	5	6	7	8	9	10		

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

APPENDIX H

DAILY RECAPITULATION SHEETS: APPOINTMENT CLERKS AND RECEPTIONISTS

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - _____
HOURS SAMPLED -_____

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1											
2											
3											
4											
5											
6											
7											
TOTAL											

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - _____
HOURS SAMPLED -_____

DAILY RECAP SHEET

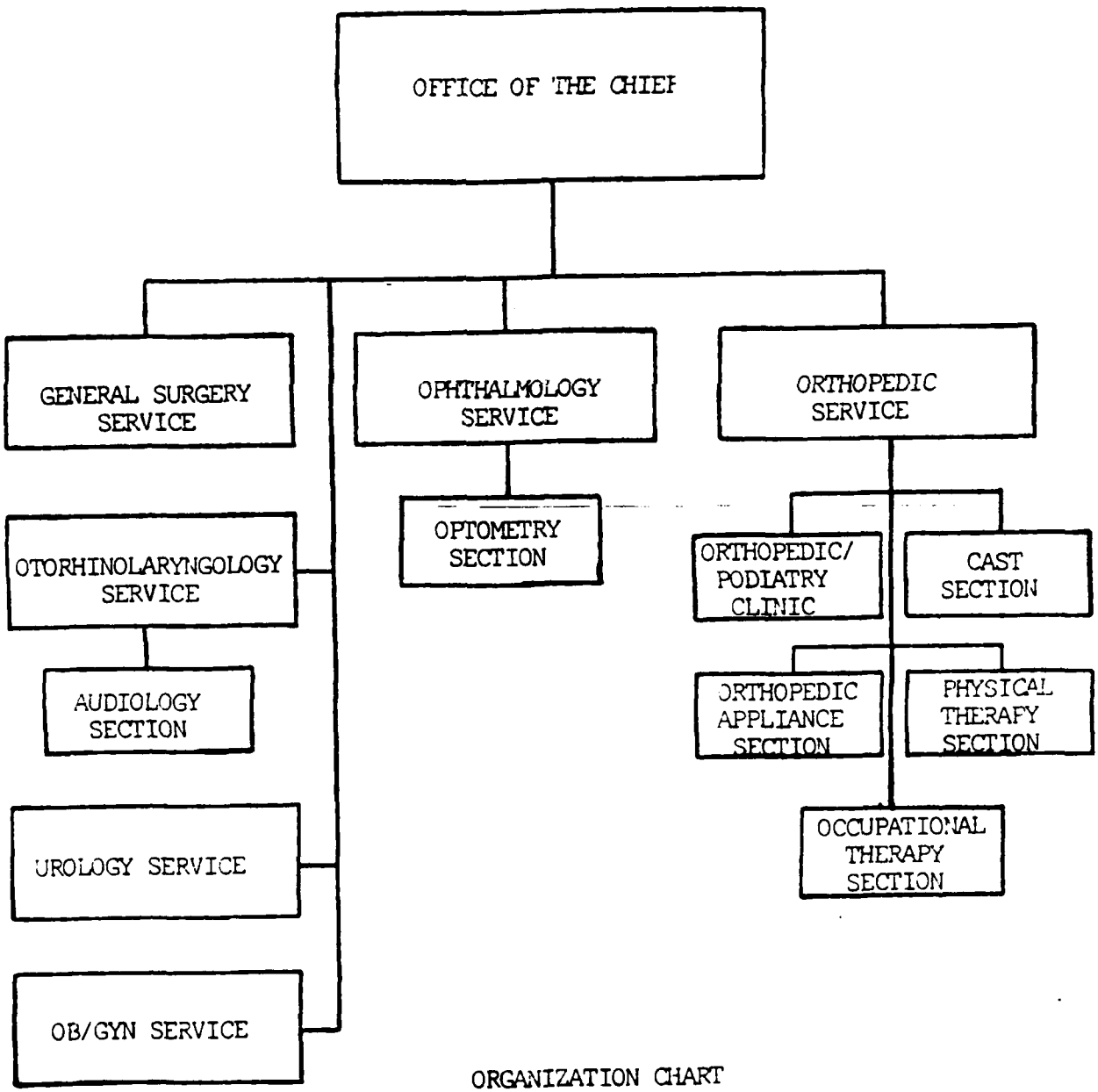
TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
TOTAL											

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

APPENDIX I

ORGANIZATIONAL CHART:
DEPARTMENT OF SURGERY

DEPARTMENT OF SURGERY



ORGANIZATION CHART

APPENDIX J

SUMMARY WORKLOAD DATA FOR THE APPOINTMENT CLERKS

Summary Data Collection Sheet
Appointment Clerks (1 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	HOLIDAY	HOLIDAY
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	HOLIDAY	HOLIDAY
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	HOLIDAY	HOLIDAY
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Summary Data Collection Sheet
Appointment Clerks (2 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	17	4
0800-0859	20	10
0900-0959	20	10
1000-1059	19	10
1100-1159	0	0
1200-1259	11	15
1300-1359	20	18
1400-1459	20	4
1500-1559	10	3
1600-1630	0	0
Total	137	74

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	MISSING DATA	MISSING DATA
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	MISSING DATA	MISSING DATA
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Summary Data Collection Sheet
Appointment Clerks (3 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	12	2
0800-0859	15	15
0900-0959	0	25
1000-1059	20	10
1100-1159	0	0
1200-1259	8	10
1300-1359	15	5
1400-1459	5	5
1500-1559	4	2
1600-1630	0	0
Total	79	74

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	18	0
0800-0859	30	0
0900-0959	28	10
1000-1059	26	15
1100-1159	10	20
1200-1259	0	0
1300-1359	20	20
1400-1459	20	0
1500-1559	5	0
1600-1630	0	0
Total	157	65

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	30	2
0800-0859	45	15
0900-0959	28	35
1000-1059	46	25
1100-1159	10	20
1200-1259	8	10
1300-1359	35	25
1400-1459	25	5
1500-1559	9	2
1600-1630	0	0
Total	236	139

Summary Data Collection Sheet
Appointment Clerks (4 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	13	7
0800-0859	24	10
0900-0959	15	12
1000-1059	30	10
1100-1159	0	0
1200-1259	24	4
1300-1359	20	5
1400-1459	20	10
1500-1559	10	5
1600-1630	0	0
Total	156	63

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	10	0
0800-0859	15	7
0900-0959	17	17
1000-1059	10	7
1100-1159	6	2
1200-1259	0	0
1300-1359	15	3
1400-1459	10	1
1500-1559	6	0
1600-1630	0	0
Total	89	37

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	23	7
0800-0859	39	17
0900-0959	32	29
1000-1059	40	17
1100-1159	6	2
1200-1259	24	4
1300-1359	35	8
1400-1459	30	11
1500-1559	16	5
1600-1630	0	0
Total	245	100

Summary Data Collection Sheet
Appointment Clerks (5 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	10	4
0800-0859	10	5
0900-0959	15	15
1000-1059	18	12
1100-1159	0	0
1200-1259	28	9
1300-1359	16	6
1400-1459	22	10
1500-1559	12	3
1600-1630	0	0
Total	131	64

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	6	0
0800-0859	22	10
0900-0959	35	3
1000-1059	30	5
1100-1159	16	0
1200-1259	0	0
1300-1359	20	2
1400-1459	15	0
1500-1559	0	0
1600-1630	0	0
Total	144	20

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	16	4
0800-0859	32	15
0900-0959	50	18
1000-1059	48	17
1100-1159	16	0
1200-1259	28	9
1300-1359	36	8
1400-1459	37	10
1500-1559	12	3
1600-1630	0	0
Total	275	84

Summary Data Collection Sheet
Appointment Clerks (8 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	11	5
0800-0859	15	5
0900-0959	30	8
1000-1059	28	6
1100-1159	0	0
1200-1259	20	5
1300-1359	19	7
1400-1459	15	8
1500-1559	5	3
1600-1630	0	0
Total	143	47

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	8	3
0800-0859	17	11
0900-0959	25	15
1000-1059	10	3
1100-1159	11	2
1200-1259	0	0
1300-1359	11	6
1400-1459	4	1
1500-1559	5	0
1600-1630	0	0
Total	91	41

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	19	8
0800-0859	32	16
0900-0959	55	23
1000-1059	38	9
1100-1159	11	2
1200-1259	20	5
1300-1359	30	13
1400-1459	19	9
1500-1559	10	3
1600-1630	0	0
Total	234	88

Summary Data Collection Sheet
Appointment Clerks (9 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	15	5
0800-0859	28	5
0900-0959	29	10
1000-1059	34	10
1100-1159	0	0
1200-1259	9	10
1300-1359	5	5
1400-1459	25	5
1500-1559	10	3
1600-1630	0	0
Total	155	53

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	0	1
0800-0859	18	5
0900-0959	26	3
1000-1059	16	1
1100-1159	11	6
1200-1259	0	0
1300-1359	19	2
1400-1459	18	4
1500-1559	0	0
1600-1630	0	0
Total	108	22

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	15	6
0800-0859	46	10
0900-0959	55	13
1000-1059	50	11
1100-1159	11	6
1200-1259	9	10
1300-1359	24	7
1400-1459	43	9
1500-1559	10	3
1600-1630	0	0
Total	263	75

Summary Data Collection Sheet
Appointment Clerks (10 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	25	4
0800-0859	40	8
0900-0959	40	10
1000-1059	30	3
1100-1159	0	0
1200-1259	30	5
1300-1359	40	11
1400-1459	25	7
1500-1559	15	10
1600-1630	0	0
Total	245	58

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	3	0
0800-0859	19	2
0900-0959	30	0
1000-1059	33	4
1100-1159	20	8
1200-1259	0	0
1300-1359	15	0
1400-1459	13	2
1500-1559	0	3
1600-1630	0	0
Total	133	19

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	28	4
0800-0859	59	10
0900-0959	70	10
1000-1059	63	7
1100-1159	20	8
1200-1259	30	5
1300-1359	55	11
1400-1459	38	9
1500-1559	15	13
1600-1630	0	0
Total	378	77

Summary Data Collection Sheet
Appointment Clerks (11 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	20	4
0800-0859	25	9
0900-0959	30	5
1000-1059	27	11
1100-1159	0	0
1200-1259	35	10
1300-1359	30	8
1400-1459	35	7
1500-1559	19	4
1600-1630	0	4
Total	221	58

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	9	3
0800-0859	26	12
0900-0959	26	6
1000-1059	19	7
1100-1159	8	24
1200-1259	0	0
1300-1359	10	4
1400-1459	15	3
1500-1559	0	2
1600-1630	0	0
Total	113	61

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	29	7
0800-0859	51	21
0900-0959	56	11
1000-1059	46	18
1100-1159	8	24
1200-1259	35	10
1300-1359	40	12
1400-1459	50	10
1500-1559	19	6
1600-1630	0	0
Total	334	119

Summary Data Collection Sheet
Appointment Clerks (12 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	0	0
0800-0859	8	0
0900-0959	13	0
1000-1059	58	2
1100-1159	0	0
1200-1259	7	5
1300-1359	9	5
1400-1459	8	2
1500-1559	0	0
1600-1630	0	0
Total	103	14

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	22	0
0800-0859	35	0
0900-0959	34	0
1000-1059	22	0
1100-1159	16	0
1200-1259	0	0
1300-1359	22	7
1400-1459	16	3
1500-1559	0	6
1600-1630	0	0
Total	167	16

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	22	0
0800-0859	43	0
0900-0959	47	0
1000-1059	80	2
1100-1159	16	0
1200-1259	7	5
1300-1359	31	12
1400-1459	24	5
1500-1559	0	6
1600-1630	0	0
Total	270	30

Summary Data Collection Sheet
Appointment Clerks (15 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	4	5
0800-0859	11	15
0900-0959	15	5
1000-1059	14	13
1100-1159	0	0
1200-1259	13	5
1300-1359	7	5
1400-1459	10	3
1500-1559	3	2
1600-1630	0	0
Total	77	53

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	5	0
0800-0859	18	10
0900-0959	26	15
1000-1059	15	22
1100-1159	10	10
1200-1259	0	0
1300-1359	26	3
1400-1459	6	1
1500-1559	3	0
1600-1630	0	0
Total	109	61

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	9	5
0800-0859	29	25
0900-0959	41	20
1000-1059	29	35
1100-1159	10	10
1200-1259	13	5
1300-1359	33	8
1400-1459	16	4
1500-1559	6	2
1600-1630	0	0
Total	186	114

Summary Data Collection Sheet
Appointment Clerks (16 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	10	3
0800-0859	20	5
0900-0959	10	8
1000-1059	20	9
1100-1159	0	0
1200-1259	20	11
1300-1359	10	5
1400-1459	7	2
1500-1559	9	4
1600-1630	0	0
Total	106	47

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	0
0800-0859	19	7
0900-0959	30	11
1000-1059	14	8
1100-1159	7	3
1200-1259	0	0
1300-1359	6	2
1400-1459	12	1
1500-1559	0	0
1600-1630	0	0
Total	90	32

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	12	3
0800-0859	39	12
0900-0959	40	19
1000-1059	34	17
1100-1159	7	3
1200-1259	20	11
1300-1359	16	7
1400-1459	19	3
1500-1559	9	4
1600-1630	0	0
Total	196	79

Summary Data Collection Sheet
Appointment Clerks (17 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	18	5
0800-0859	20	5
0900-0959	20	8
1000-1059	35	5
1100-1159	0	0
1200-1259	25	10
1300-1359	25	3
1400-1459	18	2
1500-1559	15	2
1600-1630	0	0
Total	176	40

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	3	3
0800-0859	30	6
0900-0959	25	11
1000-1059	26	5
1100-1159	18	1
1200-1259	0	1
1300-1359	38	2
1400-1459	30	1
1500-1559	0	0
1600-1630	0	0
Total	170	30

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	21	8
0800-0859	50	11
0900-0959	45	19
1000-1059	61	10
1100-1159	18	1
1200-1259	25	11
1300-1359	63	5
1400-1459	48	3
1500-1559	15	2
1600-1630	0	0
Total	346	70

Summary Data Collection Sheet
Appointment Clerks (18 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	9	2
0800-0859	10	5
0900-0959	10	3
1000-1059	10	5
1100-1159	0	0
1200-1259	20	5
1300-1359	8	0
1400-1459	5	0
1500-1559	3	0
1600-1630	0	0
Total	75	20

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	9	0
0800-0859	27	10
0900-0959	24	8
1000-1059	32	18
1100-1159	23	11
1200-1259	0	0
1300-1359	30	6
1400-1459	27	4
1500-1559	11	0
1600-1630	0	0
Total	183	57

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	18	2
0800-0859	37	15
0900-0959	34	11
1000-1059	42	23
1100-1159	23	11
1200-1259	20	5
1300-1359	38	6
1400-1459	32	4
1500-1559	14	0
1600-1630	0	0
Total	258	77

Summary Data Collection Sheet
Appointment Clerks (19 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	0
0800-0859	5	0
0900-0959	5	0
1000-1059	10	3
1100-1159	0	0
1200-1259	10	7
1300-1359	5	5
1400-1459	5	3
1500-1559	3	0
1600-1630	0	0
Total	45	18

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	1
0800-0859	18	13
0900-0959	30	9
1000-1059	15	4
1100-1159	5	3
1200-1259	0	0
1300-1359	15	2
1400-1459	22	2
1500-1559	0	0
1600-1630	0	0
Total	107	34

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	4	1
0800-0859	23	13
0900-0959	35	9
1000-1059	25	7
1100-1159	5	3
1200-1259	10	7
1300-1359	20	7
1400-1459	27	5
1500-1559	3	0
1600-1630	0	0
Total	152	52

Summary Data Collection Sheet
Appointment Clerks (22 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	0	0
0800-0859	24	8
0900-0959	18	12
1000-1059	21	14
1100-1159	0	0
1200-1259	12	0
1300-1359	17	3
1400-1459	12	0
1500-1559	5	3
1600-1630	0	0
Total	109	40

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	5	0
0800-0859	26	10
0900-0959	22	6
1000-1059	21	14
1100-1159	17	15
1200-1259	0	0
1300-1359	27	7
1400-1459	23	9
1500-1559	0	0
1600-1630	0	0
Total	141	61

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	5	0
0800-0859	50	18
0900-0959	40	18
1000-1059	42	28
1100-1159	17	15
1200-1259	12	0
1300-1359	44	10
1400-1459	35	9
1500-1559	5	3
1600-1630	0	0
Total	250	101

Summary Data Collection Sheet
Appointment Clerks (23 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	7	5
0800-0859	12	3
0900-0959	5	4
1000-1059	18	15
1100-1159	0	0
1200-1259	7	0
1300-1359	7	0
1400-1459	4	7
1500-1559	3	1
1600-1630	0	0
Total	63	35

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	3	0
0800-0859	21	5
0900-0959	17	8
1000-1059	20	2
1100-1159	16	4
1200-1259	1	2
1300-1359	15	1
1400-1459	17	3
1500-1559	1	0
1600-1630	0	0
Total	111	25

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	10	5
0800-0859	33	8
0900-0959	22	12
1000-1059	38	17
1100-1159	16	4
1200-1259	8	2
1300-1359	22	1
1400-1459	21	10
1500-1559	4	1
1600-1630	0	0
Total	174	60

Summary Data Collection Sheet
Appointment Clerks (24 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	1
0800-0859	6	2
0900-0959	0	3
1000-1059	19	5
1100-1159	0	0
1200-1259	10	1
1300-1359	10	5
1400-1459	9	2
1500-1559	6	6
1600-1630	0	0
Total	62	25

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	1
0800-0859	32	4
0900-0959	30	3
1000-1059	25	1
1100-1159	11	0
1200-1259	18	1
1300-1359	22	0
1400-1459	20	0
1500-1559	23	0
1600-1630	0	0
Total	183	10

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	4	2
0800-0859	38	6
0900-0959	30	6
1000-1059	44	6
1100-1159	11	0
1200-1259	28	2
1300-1359	32	5
1400-1459	29	2
1500-1559	29	6
1600-1630	0	0
Total	245	35

Summary Data Collection Sheet
Appointment Clerks (25 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	0	0
0800-0859	14	4
0900-0959	5	6
1000-1059	20	12
1100-1159	0	0
1200-1259	7	0
1300-1359	8	3
1400-1459	1	3
1500-1559	0	0
1600-1630	0	0
Total	55	28

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	0
0800-0859	20	0
0900-0959	18	6
1000-1059	10	8
1100-1159	20	9
1200-1259	7	0
1300-1359	25	6
1400-1459	11	5
1500-1559	7	6
1600-1630	0	0
Total	120	40

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	2	0
0800-0859	34	4
0900-0959	23	12
1000-1059	30	20
1100-1159	20	9
1200-1259	14	0
1300-1359	33	9
1400-1459	12	8
1500-1559	7	6
1600-1630	0	0
Total	175	68

Summary Data Collection Sheet
Appointment Clerks (26 September 1986)

Clerk A

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	MISSING DATA	MISSING DATA
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

Clerk B

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759	1	0
0800-0859	22	1
0900-0959	11	1
1000-1059	5	2
1100-1159	16	3
1200-1259	16	0
1300-1359	11	4
1400-1459	23	12
1500-1559	0	0
1600-1630	0	0
Total	105	23

Combined Workload

TIME	TELEPHONE CALLS	PATIENT CONTACTS
0730-0759		
0800-0859		
0900-0959		
1000-1059		
1100-1159		
1200-1259	MISSING DATA	MISSING DATA
1300-1359		
1400-1459		
1500-1559		
1600-1630		
Total		

APPENDIX K

SUMMARY WORKLOAD DATA FOR THE RECEPTIONISTS

Summary Data Collection Sheet
Receptionists (1 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259	HOLIDAY	HOLIDAY	
1300-1359			
1400-1459			
1500-1559			
1600-1630			
Total			

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259	HOLIDAY	HOLIDAY	
1300-1359			
1400-1459			
1500-1559			
1600-1630			
Total			

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259	HOLIDAY	HOLIDAY	
1300-1359			
1400-1459			
1500-1559			
1600-1630			
Total			

Summary Data Collection Sheet
Receptionists (2 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	10	7	9
0800-0859	7	13	15
0900-0959	5	5	8
1000-1059	9	9	16
1100-1159	11	4	10
1200-1259	0	1	1
1300-1359	0	0	0
1400-1459	0	0	0
1500-1559	0	0	0
1600-1630	0	0	0
Total	42	39	59

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	10	15
0800-0859	17	8	13
0900-0959	8	15	13
1000-1059	10	10	7
1100-1159	22	20	10
1200-1259	15	10	10
1300-1359	20	5	10
1400-1459	15	5	5
1500-1559	5	5	5
1600-1630	5	5	5
Total	125	93	93

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	18	17	24
0800-0859	24	21	28
0900-0959	13	20	21
1000-1059	19	19	23
1100-1159	33	24	20
1200-1259	15	11	11
1300-1359	20	5	10
1400-1459	15	5	5
1500-1559	5	5	5
1600-1630	5	5	5
Total	167	132	152

Summary Data Collection Sheet
Receptionists (3 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	10	11
0800-0859	12	15	23
0900-0959	14	17	18
1000-1059	8	11	14
1100-1159	5	5	8
1200-1259	5	15	15
1300-1359	10	28	28
1400-1459	7	8	9
1500-1559	5	2	4
1600-1630	0	0	0
Total	71	111	130

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	15	5	5
0800-0859	22	15	20
0900-0959	24	6	14
1000-1059	13	10	10
1100-1159	10	2	15
1200-1259	15	8	8
1300-1359	15	10	10
1400-1459	15	12	5
1500-1559	10	15	2
1600-1630	5	0	0
Total	144	83	89

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	20	15	16
0800-0859	34	30	43
0900-0959	38	23	32
1000-1059	21	21	24
1100-1159	15	7	23
1200-1259	20	23	23
1300-1359	25	38	38
1400-1459	22	20	14
1500-1559	15	17	6
1600-1630	5	0	0
Total	215	194	219

Summary Data Collection Sheet
Receptionists (4 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	5	5
0800-0859	17	12	17
0900-0959	18	4	9
1000-1059	3	0	3
1100-1159	0	0	0
1200-1259	0	0	0
1300-1359	8	22	22
1400-1459	3	5	6
1500-1559	10	1	6
1600-1630	0	0	0
Total	62	49	68

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	12	13	20
0800-0859	20	15	7
0900-0959	21	6	15
1000-1059	5	5	17
1100-1159	21	7	8
1200-1259	17	5	10
1300-1359	12	5	5
1400-1459	7	8	5
1500-1559	10	7	11
1600-1630	8	5	3
Total	133	76	101

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	15	18	25
0800-0859	37	27	24
0900-0959	39	10	24
1000-1059	8	5	20
1100-1159	21	7	8
1200-1259	17	5	10
1300-1359	20	27	27
1400-1459	10	13	11
1500-1559	20	8	17
1600-1630	8	5	3
Total	195	125	169

Summary Data Collection Sheet
Receptionists (5 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	2	1	3
0800-0859	13	8	16
0900-0959	6	9	12
1000-1059	11	11	13
1100-1159	1	0	0
1200-1259	6	11	15
1300-1359	6	16	16
1400-1459	2	2	2
1500-1559	2	2	1
1600-1630	2	1	3
Total	51	61	81

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	12	10	8
0800-0859	16	4	16
0900-0959	18	4	13
1000-1059	14	7	8
1100-1159	11	1	11
1200-1259	7	2	7
1300-1359	7	8	5
1400-1459	10	5	18
1500-1559	12	8	5
1600-1630	0	0	0
Total	107	49	91

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	14	11	11
0800-0859	29	12	32
0900-0959	24	13	25
1000-1059	25	18	21
1100-1159	12	1	11
1200-1259	13	13	22
1300-1359	13	24	21
1400-1459	12	7	20
1500-1559	14	10	6
1600-1630	2	1	3
Total	158	110	172

Summary Data Collection Sheet
Receptionists (8 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	1	9	9
0800-0859	1	10	10
0900-0959	11	10	20
1000-1059	4	5	6
1100-1159	3	0	5
1200-1259	7	12	15
1300-1359	18	10	20
1400-1459	7	17	19
1500-1559	10	3	7
1600-1630	2	0	0
Total	64	76	111

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	6	5	5
0800-0859	4	9	17
0900-0959	7	3	12
1000-1059	18	12	9
1100-1159	7	4	7
1200-1259	7	4	6
1300-1359	4	3	4
1400-1459	0	0	0
1500-1559	0	0	0
1600-1630	0	0	0
Total	53	40	60

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	14	14
0800-0859	5	19	27
0900-0959	18	13	32
1000-1059	22	17	15
1100-1159	10	4	12
1200-1259	14	16	21
1300-1359	22	13	24
1400-1459	7	17	19
1500-1559	10	3	7
1600-1630	2	0	0
Total	117	116	171

Summary Data Collection Sheet
Receptionists (9 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	4	13	14
0800-0859	6	20	20
0900-0959	4	22	17
1000-1059	7	5	7
1100-1159	8	8	12
1200-1259	10	12	18
1300-1359	10	16	19
1400-1459	8	9	9
1500-1559	12	5	6
1600-1630	0	0	0
Total	69	110	122

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	7	8
0800-0859	10	4	12
0900-0959	20	6	11
1000-1059	17	7	12
1100-1159	8	3	7
1200-1259	8	10	10
1300-1359	17	7	8
1400-1459	15	3	8
1500-1559	7	2	6
1600-1630	0	0	0
Total	107	49	82

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	9	20	22
0800-0859	16	24	32
0900-0959	24	28	28
1000-1059	24	12	19
1100-1159	16	11	19
1200-1259	18	22	28
1300-1359	27	23	27
1400-1459	23	12	17
1500-1559	19	7	12
1600-1630	0	0	0
Total	176	159	204

Summary Data Collection Sheet
Receptionists (10 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	8	10
0800-0859	3	12	12
0900-0959	7	5	7
1000-1059	3	5	7
1100-1159	2	2	3
1200-1259	10	14	17
1300-1359	5	14	15
1400-1459	6	12	14
1500-1559	0	0	0
1600-1630	0	0	0
Total	39	72	85

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	6	8
0800-0859	11	7	10
0900-0959	21	8	15
1000-1059	17	10	12
1100-1159	11	2	12
1200-1259	6	0	0
1300-1359	6	5	7
1400-1459	17	8	15
1500-1559	8	2	12
1600-1630	7	0	0
Total	109	48	91

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	14	18
0800-0859	14	19	22
0900-0959	28	13	22
1000-1059	20	15	19
1100-1159	13	4	15
1200-1259	16	14	17
1300-1359	11	19	22
1400-1459	23	20	29
1500-1559	8	2	12
1600-1630	7	0	0
Total	148	120	176

Summary Data Collection Sheet
Receptionists (11 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	10	10
0800-0859	3	6	7
0900-0959	3	7	6
1000-1059	12	13	18
1100-1159	3	0	2
1200-1259	4	14	17
1300-1359	12	6	14
1400-1459	0	4	4
1500-1559	6	4	7
1600-1630	3	0	2
Total	49	64	87

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	7	5
0800-0859	6	6	7
0900-0959	12	7	13
1000-1059	12	7	15
1100-1159	7	2	7
1200-1259	7	2	7
1300-1359	8	5	9
1400-1459	12	3	12
1500-1559	12	6	7
1600-1630	3	1	2
Total	84	46	84

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	17	15
0800-0859	9	12	14
0900-0959	15	14	19
1000-1059	24	20	33
1100-1159	10	2	9
1200-1259	11	16	24
1300-1359	20	11	23
1400-1459	12	7	16
1500-1559	18	10	14
1600-1630	6	1	4
Total	133	110	171

Summary Data Collection Sheet
Receptionists (12 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	4	8	11
0800-0859	4	9	9
0900-0959	0	4	4
1000-1059	11	5	7
1100-1159	1	1	2
1200-1259	2	2	3
1300-1359	5	18	17
1400-1459	2	1	1
1500-1559	0	1	1
1600-1630	0	0	0
Total	29	49	55

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	11	7	10
0800-0859	12	7	10
0900-0959	17	7	21
1000-1059	17	5	23
1100-1159	12	5	10
1200-1259	16	8	12
1300-1359	15	5	5
1400-1459	17	5	8
1500-1559	12	5	8
1600-1630	0	0	0
Total	129	54	107

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	15	15	21
0800-0859	16	16	19
0900-0959	17	11	25
1000-1059	28	10	30
1100-1159	13	6	12
1200-1259	18	10	15
1300-1359	20	23	22
1400-1459	19	6	9
1500-1559	12	6	9
1600-1630	0	0	0
Total	158	103	162

Summary Data Collection Sheet
Receptionists (15 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	11	10
0800-0859	16	4	10
0900-0959	9	6	11
1000-1059	3	6	9
1100-1159	2	7	7
1200-1259	10	25	22
1300-1359	10	29	29
1400-1459	4	10	13
1500-1559	9	6	7
1600-1630	0	0	0
Total	70	104	118

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	8	12
0800-0859	15	12	16
0900-0959	14	6	12
1000-1059	18	7	15
1100-1159	11	3	12
1200-1259	0	0	0
1300-1359	0	0	0
1400-1459	0	0	0
1500-1559	0	0	0
1600-1630	0	0	0
Total	65	36	67

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	14	19	22
0800-0859	31	16	26
0900-0959	23	12	23
1000-1059	21	13	24
1100-1159	13	10	19
1200-1259	10	25	22
1300-1359	10	29	29
1400-1459	4	10	13
1500-1559	9	6	7
1600-1630	0	0	0
Total	135	140	185

Summary Data Collection Sheet
Receptionists (16 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	1	2	2
0800-0859	7	13	13
0900-0959	4	11	12
1000-1059	18	15	18
1100-1159	4	3	4
1200-1259	1	9	9
1300-1359	11	25	26
1400-1459	1	1	2
1500-1559	4	2	4
1600-1630	0	0	0
Total	51	81	90

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	7	12
0800-0859	18	17	13
0900-0959	14	18	12
1000-1059	10	6	12
1100-1159	8	10	20
1200-1259	12	12	23
1300-1359	12	12	7
1400-1459	17	7	8
1500-1559	15	8	8
1600-1630	0	0	0
Total	113	97	115

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	9	14
0800-0859	25	30	26
0900-0959	18	29	24
1000-1059	28	21	30
1100-1159	12	13	24
1200-1259	13	21	32
1300-1359	23	37	33
1400-1459	18	8	10
1500-1559	19	10	12
1600-1630	0	0	0
Total	164	178	205

Summary Data Collection Sheet
Receptionists (17 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	2	4	5
0800-0859	3	9	9
0900-0959	8	10	11
1000-1059	7	5	8
1100-1159	4	0	5
1200-1259	4	11	11
1300-1359	10	9	12
1400-1459	2	7	9
1500-1559	4	2	5
1600-1630	0	0	0
Total	44	57	75

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259	MISSING DATA	MISSING DATA	
1300-1359			
1400-1459			
1500-1559			
1600-1630			
Total			

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759			
0800-0859			
0900-0959			
1000-1059			
1100-1159			
1200-1259	MISSING DATA	MISSING DATA	
1300-1359			
1400-1459			
1500-1559			
1600-1630			
Total			

Summary Data Collection Sheet
Receptionists (18 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	1	3	4
0800-0859	6	11	12
0900-0959	3	10	11
1000-1059	2	2	4
1100-1159	1	2	2
1200-1259	11	24	25
1300-1359	6	5	5
1400-1459	1	12	12
1500-1559	5	0	0
1600-1630	1	0	0
Total	37	69	75

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	21	17
0800-0859	13	23	12
0900-0959	22	12	11
1000-1059	19	13	8
1100-1159	8	3	9
1200-1259	11	5	3
1300-1359	7	7	6
1400-1459	12	7	13
1500-1559	8	5	5
1600-1630	0	0	0
Total	108	96	84

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	9	24	21
0800-0859	19	34	24
0900-0959	25	22	22
1000-1059	21	15	12
1100-1159	9	5	11
1200-1259	22	29	28
1300-1359	13	12	11
1400-1459	13	19	25
1500-1559	13	5	5
1600-1630	1	0	0
Total	145	165	159

Summary Data Collection Sheet
Receptionists (19 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	1	2	3
0800-0859	7	2	6
0900-0959	3	10	11
1000-1059	1	4	4
1100-1159	14	2	6
1200-1259	0	0	0
1300-1359	0	0	0
1400-1459	0	0	0
1500-1559	0	0	0
1600-1630	0	0	0
Total	26	20	30

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	6	6	8
0800-0859	8	6	5
0900-0959	5	2	7
1000-1059	7	5	5
1100-1159	0	0	0
1200-1259	6	5	4
1300-1359	17	12	17
1400-1459	18	13	22
1500-1559	0	0	0
1600-1630	0	0	0
Total	67	49	68

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	8	11
0800-0859	15	8	11
0900-0959	8	12	18
1000-1059	8	9	9
1100-1159	14	2	6
1200-1259	6	5	4
1300-1359	17	12	17
1400-1459	18	13	22
1500-1559	0	0	0
1600-1630	0	0	0
Total	93	69	98

Summary Data Collection Sheet
Receptionists (22 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	4	4	6
0800-0859	17	18	27
0900-0959	1	7	7
1000-1059	7	18	23
1100-1159	9	7	10
1200-1259	19	17	28
1300-1359	1	5	5
1400-1459	0	0	0
1500-1559	0	0	0
1600-1630	0	0	0
Total	58	76	106

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	4	5	3
0800-0859	18	11	22
0900-0959	10	10	10
1000-1059	13	12	13
1100-1159	16	10	7
1200-1259	0	0	0
1300-1359	16	22	22
1400-1459	15	17	18
1500-1559	16	7	15
1600-1630	1	2	3
Total	109	96	113

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	9	9
0800-0859	35	29	49
0900-0959	11	17	17
1000-1059	20	30	36
1100-1159	25	17	17
1200-1259	19	17	28
1300-1359	17	27	27
1400-1459	15	17	18
1500-1559	16	7	15
1600-1630	1	2	3
Total	167	172	219

Summary Data Collection Sheet
Receptionists (23 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	10	12
0800-0859	2	7	8
0900-0959	11	23	26
1000-1059	13	15	17
1100-1159	6	7	11
1200-1259	11	14	19
1300-1359	12	15	21
1400-1459	6	9	9
1500-1559	3	1	1
1600-1630	0	0	0
Total	67	101	124

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	5	8
0800-0859	17	8	5
0900-0959	8	11	11
1000-1059	10	5	10
1100-1159	7	7	5
1200-1259	6	4	5
1300-1359	2	3	2
1400-1459	8	4	8
1500-1559	11	7	7
1600-1630	0	0	0
Total	74	54	61

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	15	20
0800-0859	19	15	13
0900-0959	19	34	37
1000-1059	23	20	27
1100-1159	13	14	16
1200-1259	17	18	24
1300-1359	14	18	23
1400-1459	14	13	17
1500-1559	14	8	8
1600-1630	0	0	0
Total	141	155	185

Summary Data Collection Sheet
Receptionists (24 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	2	3
0800-0859	14	9	14
0900-0959	5	9	9
1000-1059	2	1	2
1100-1159	17	22	27
1200-1259	8	7	5
1300-1359	14	5	12
1400-1459	11	18	20
1500-1559	9	5	5
1600-1630	1	2	2
Total	84	80	99

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	3	4
0800-0859	8	2	8
0900-0959	6	4	8
1000-1059	6	4	9
1100-1159	6	2	6
1200-1259	4	4	6
1300-1359	6	5	4
1400-1459	5	2	3
1500-1559	3	0	0
1600-1630	2	0	0
Total	53	26	48

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	10	5	7
0800-0859	22	11	22
0900-0959	11	13	17
1000-1059	8	5	11
1100-1159	23	24	33
1200-1259	12	11	11
1300-1359	20	10	16
1400-1459	16	20	23
1500-1559	12	5	5
1600-1630	3	2	2
Total	137	106	147

Summary Data Collection Sheet
Receptionists (25 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	1	1	1
0800-0859	13	7	11
0900-0959	13	8	8
1000-1059	23	22	26
1100-1159	9	4	6
1200-1259	9	8	13
1300-1359	17	5	11
1400-1459	11	10	12
1500-1559	8	1	5
1600-1630	0	0	0
Total	104	66	93

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	6	7	6
0800-0859	7	5	8
0900-0959	6	3	3
1000-1059	7	3	2
1100-1159	6	2	6
1200-1259	7	5	2
1300-1359	7	3	8
1400-1459	7	1	8
1500-1559	8	2	11
1600-1630	5	0	0
Total	66	31	54

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	7	8	7
0800-0859	20	12	19
0900-0959	19	11	11
1000-1059	30	25	28
1100-1159	15	6	12
1200-1259	16	13	15
1300-1359	24	8	19
1400-1459	18	11	20
1500-1559	16	3	16
1600-1630	5	0	0
Total	170	97	147

Summary Data Collection Sheet
Receptionists (26 September 1986)

Receptionist A

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	3	3	6
0800-0859	14	9	17
0900-0959	18	15	21
1000-1059	11	11	14
1100-1159	2	0	2
1200-1259	5	11	14
1300-1359	0	0	0
1400-1459	8	4	7
1500-1559	10	0	7
1600-1630	3	1	1
Total	74	54	89

Receptionist B

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	5	2	5
0800-0859	0	0	0
0900-0959	2	0	2
1000-1059	3	6	6
1100-1159	7	2	6
1200-1259	5	7	12
1300-1359	9	7	17
1400-1459	7	6	5
1500-1559	5	1	2
1600-1630	0	0	0
Total	43	31	55

Combined Workload

TIME	TELEPHONE CALLS	PATIENTS RECEIVED	INQUIRIES HANDLED
0730-0759	8	5	11
0800-0859	14	9	17
0900-0959	20	15	23
1000-1059	14	17	20
1100-1159	9	2	8
1200-1259	10	18	26
1300-1359	9	7	17
1400-1459	15	10	12
1500-1559	15	1	9
1600-1630	3	1	1
Total	117	85	144

APPENDIX L

WORK SAMPLING OBSERVATIONS MADE OF APPOINTMENT CLERKS

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - 22 SEPTEMBER 1986
HOURS SAMPLED - 17.5

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1		2	3	2						1	8
2		6	5	5	2	3	5	1	1	1	29
3			1	1	3		2	3	8	1	19
4		2			2		1	3			8
5	2		1	2					1		6
6	2					2	1	3			8
7					3	5	1				9
TOTAL	4	10	10	10	10	10	10	10	10	3	87

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - 23 SEPTEMBER 1986
HOURS SAMPLED - 17.5

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1		2	2		2		1		1		8
2		5	3	1	4	4	3	3	3		26
3	3	1	2	2	1		3	5	1	1	19
4		1	1	2			3		1		8
5	2		1	2				2	2	1	10
6	1	1	1	3	1	1			2		10
7					2	5					7
TOTAL	6	10	10	10	10	10	10	10	10	2	88

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - 24 SEPTEMBER 1986
HOURS SAMPLED - 17.5

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1				1	1		2	3			7
2		6	5	6	6	6	5	4	7		45
3	2	4	1	2	1		1		1	2	14
4							1		2		3
5	2		2		1			1		1	7
6			2	1		1	1	2			7
7					1	3					4
TOTAL	4	10	10	10	10	10	10	10	10	3	87

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - 25 SEPTEMBER 1986
HOURS SAMPLED - 16

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1			1	1	2		1	1	1		7
2	1	8	5	2	3	2	5	2	2	1	31
3	1	1	1	4	2		3		1		13
4	2		2			2		2			8
5	2			1						1	4
6		1	1			1		3			6
7					3	5	1				9
TOTAL	6	10	10	8	10	10	10	8	5	1	78

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

POSITION - APPOINTMENT CLERKS
CLINIC - OB/GYN
DATE - 26 SEPTEMBER 1986
HOURS SAMPLED - 17.25

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1			1	2	2			1	2		8
2		5	5	3	4	2	6	5	3		33
3	2	2	1		2	2	1	1	2		13
4	1	3	3	1			2				10
5				2				2	1		5
6	1					1		1			3
7					2	5	1				8
TOTAL	4	10	10	8	10	10	10	10	8	0	80

1 - PATIENT CONTACT
2 - TELEPHONE CONTACT
3 - RECORDS PREPARATION/ MAINTENANCE
4 - TALKING TO STAFF MEMBERS
5 - AWAY FROM DESK
6 - IDLE
7 - LUNCH

APPENDIX M

WORK SAMPLING OBSERVATIONS MADE OF RECEPTIONISTS

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - 22 SEPTEMBER 1986
HOURS SAMPLED - 16.5

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1	2	2	3	2	1	1	1		1		13
2	1	1	1	2		1	1	2		1	10
3		2		2	1	1		1			7
4		4	2	1	3	1	2	1	1		15
5				1			1				2
6						1		1			2
7			2		1		4	3	2		12
8	1		1	2	3			1	1	2	11
9		1	1		1		1	1			5
10						5					5
TOTAL	4	10	10	10	10	10	10	10	5	3	82

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - 23 SEPTEMBER 1986
HOURS SAMPLED - 18

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1	2	1	4	1			3	3			14
2		2		3	2	1	.	1	2		11
3			1	2		2	2	2	1		10
4	2	4	2		1		1	2	1		13
5			1	1		2	1	1			6
6											0
7	2	1	1	1	2			1	3		11
8		1		2	3				3	3	12
9		1	1							1	3
10					2	5	3				10
TOTAL	6	10	10	10	10	10	10	10	10	4	90

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - 24 SEPTEMBER 1986
HOURS SAMPLED - 18

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1	1						3	3	1		8
2			3	1	1			1	1		7
3	2	3	2			1	1	1	1	1	12
4	1	6	1	3	4	3		2	4		24
5				2							2
6											0
7			3	1	3	1	1	1	1	1	12
8		1	1	1	1		5	1	2	4	16
9				2				1			3
10				1	5						6
TOTAL	4	10	10	10	10	10	10	10	10	6	90

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - 25 SEPTEMBER 1986
HOURS SAMPLED - 18

DAILY RECAP SHEET

TASK#	0730-0759	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1630	TOTAL
1	2		2	2	1		1	2	1		11
2				1		2			1		4
3	2	1	1	1	2	1	3	1	1	1	14
4	1	5	1		1	2	1	1	1		13
5		1							2		3
6			1					1			2
7		1		1	4		1	1	3	1	12
8	1	1	3	3				4		2	14
9		1	2				1		1		5
10					2	5	3				10
TOTAL	6	10	10	8	10	10	10	10	10	4	88

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

POSITION - RECEPTIONISTS
CLINIC - OB/GYN
DATE - 26 SEPTEMBER 1986
HOURS SAMPLED - 17

DAILY RECAP SHEET

TASK#	+0730-+0759	+0800-+0859	+0900-+0959	+1000-+1059	+1100-+1159	+1200-+1259	+1300-+1359	+1400-+1459	+1500-+1559	+1600-+1630	TOTAL
1	1	1	2	1			3	2	1		11
2		1		1	1	1		1			5
3		1		1		1	1	2	1	1	8
4	1	1	1		2	1	3	3	3		15
5			1		3						4
6		1		1	1						3
7	1		2	1	1	2	2	1			10
8	1		4	3		1	1		3	4	17
9					1			1		1	3
10					1	4					5
TOTAL	4	5	10	8	10	10	10	10	8	6	81

1 - RECEIVE PATIENT
2 - ANSWER INQUIRY
3 - TELEPHONE CONTACT
4 - RECORDS PREPARATION/ MAINTENANCE
5 - TYPING
6 - PROCESS DISTRIBUTION
7 - TALKING TO STAFF MEMBERS
8 - AWAY FROM DESK
9 - IDLE
10- LUNCH

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